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AUTHOR Chin, R.; And Others
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ABSTRACT

This is Volume I of a two-volume report of a study on the exchange and use of knowledge for school improvement in three paired educational systems in Boston, Massachusetts. The pairings, which involved the collaboration of a college/university with one or more of the Boston public schools, were among 26 such collaborative arrangements mandated by court order in 1975 as part of Boston's desegregation program. The pairs investigated were: (1) Harris University-Boston Public Schools District A; (2) Massachusetts College-District B; and (3) Dunfey University-District C. The study investigated the process of interorganizational collaboration on school improvement projects within each of the paired systems. Case studies of the systems investigated are contained in the second volume of this report. This volume explains the study purposes, defines key terms, and discusses the study approach. A conceptual model of the interorganizational process derived from the case studies is described, followed by an application of the model in cross case analysis. The report concludes that in varying degrees, knowledge was exchanged and used in the pairings primarily through face-to-face rather than written communication. Such knowledge exchange/use was found to be governed by the interaction of the systems' structural arrangements, history and environment, and the hierarchy of needs and resources. Details of cross-coding schemes, a bibliography, and a directory of similar collaboratives are included as appendices. (Author/MJL)

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TDR Associates, Inc. Training/Development/Research

FINAL REPORT

Volume I

Case Studies of Three Urban University-School Collaboratives Mandated for the Improvement of Educational Practice

Prepared for the
National Institute of Education

Prepared by:

TDR Associates, Inc.
October, 1981
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385 Elliot Street, Newton, Massachusetts 02164 / (617) 969-0651

Abstract

This 1 1/2 year study (1979-1981) examined factors and conditions affecting the exchange and use of knowledge resources in three (of twenty-six) larger and more complex Pairings of colleges/universities and the Boston Public Schools, mandated by court order in 1975 as part of Boston's desegregation case. It was found that knowledge exchange/use for school improvement in these complex interorganizational arrangements (collaboratives) is governed largely by an interaction of: their structural arrangements; their particular history and environment; several, staged inter-organizational processes; and a discrete hierarchy of needs and resources (with parallel risk and impact levels).

These Pairings were found to be highly person-dependent (versus product-dependent), in which individual advocacy, networking and verbal exchange are the primary modes of project initiation, knowledge flow, and knowledge use. The predominant type of educational knowledge flow/use was found to be situational knowledge first (47%-53%), craft knowledge second (36%-41%), and research knowledge third (5%-16%). In the Pairings surprisingly little use was made of available federal/state/private R & D products for schools improvement, resulting in considerable cost ineffectiveness. Absence of sufficient feedback/altering mechanisms as a design flaw in the structural apparatus of the Pairings, was identified as the major barrier to moving beyond mid-level functioning and impact.

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PREFACE

This is a final report of a study of factors and conditions affecting the exchange and use of knowledge resources in three (of twenty-six) pairings of colleges/universities and the Boston Public Schools, mandated by court order in 1975 as part of Boston's desegregation case. The eighteen-month study was conducted of these (continued) operational pairings between 1979-1981 by TDR Associates, Inc. of Newton, Massachusetts, under a contract with the National Institute of Education.

The report is presented in two volumes. Volume II consists of the three case studies. Volume I begins with an introduction which includes: a statement of the purpose of the study, definition of key terms used, a description of the three pairings studied, their background setting, and the approach and methods used in the study. We then present a conceptual model derived from the case studies followed by an application of the model in our cross-case analysis. We then move on to a summary of our conclusions, from which we derive recommendations for both practitioners and researchers concerned with college/university and school collaborations. The details of our cross-case coding schemes, a bibliography, and a directory of similar collaboratives are included as appendices.

The study was conducted by and with the assistance of many people. The three case studies were conducted and written separately by Roger Collins, Joseph Ferreira, and Linda Perrotto. They are based on a jointly developed analytic framework refined and modified through frequent discussions with me and others during the course of their work. Patricia Lawrence served as Project Coordinator assisting in all aspects of the study. John D. Herzog and George B. Thomas consultated with us on design issues and data interpretation. Together we developed a draft

cross-case analysis. This draft was revised and expanded into the conceptual model presented through an independent analysis of the cases conducted by Joseph B. Rappa, with the assistance of John D. Herzog and William J. Genova.

We are particularly indebted to the many people associated with the pairings studied, for their time and thoughtfulness in our interviews with them. Our thanks also to Ward Mason, Project Monitor for the National Institute of Education, for his full cooperation and support. However, we accept full responsibility for conclusions and opinions expressed in this report.

Robert Chin
Principal Investigator

TDR Associates, Inc.
October, 1981

I. INTRODUCTION

A. Purposes of the Study

This is one of three studies commissioned by the National Institute of Education beginning with their issue of a Request for Proposal (RFP) in August, 1979. The request was for three contractors to independently study "three organizational networks of one type...which are more or less comparable" (RFP, p. 5). More specifically, NIE was interested in:

> ...case studies of inter-organizational arrangements for the exchange and or delivery of knowledge resources to improve elementary-secondary education (RFP, p. 1)

NIE defined "inter-organizational arrangements" as follows:

> Several terms are used more or less synonymously in this RFP: "inter-organizational arrangements", "inter-organizational collaboration", and "organizational networks". These terms are used herein to refer to formal collaborative arrangements of some enduring significance among three or more permanent entities of which at least two are unlike kinds of organizations. Offerors may wish to refine and differentiate these concepts, but no such differentiation is intended as the terms are used in the RFP. (RFP, p. 1)

Their definition of "the exchange and/or delivery of knowledge resources to improve elementary-secondary education" was a bit more involved, and warrants repeating here:

1. There are a number of kinds of knowledge. As a research agency, NIE has a particular interest in knowledge which is grounded in disciplined inquiry. However, education, like other professions, alsc relies a great deal on experience-based knowledge or "craft knowledge", and NIE has an equal interest in the processes whereby craft knowledge is accumulated and transferred.

2. Another distiction can be made between education knowledge on the one hand and "dissemination/utilization" (D/U) knowlege, or knowledge concerning structures and process of knowledge transfer and use. Through this procurement we are interested

in developing additional D/U knowledge about the process of transferring education knowledge.

3. Knowledge exists in different forms, including documents, media materials, and in peoples' heads. Networks for the exchange of document-based knowledge or media-based knowledge have been studied some in the past. NIE has a particular interest at this time in arrangements of the exchange or delivery of knowledge that is assisted by human agents. This takes three principal forms:

   . Technical assistance: person-to-person assistance in which knowledge is mobilized to focus on context-specific issues, e.g., assistance in implementing an innovation in a specific school.

   . Professional development: personally assisted staff development in which knowledge is mobilized to focus on the generic functions, problems, and skill requirements of professional roles.

   . Organizational consultation: personal assistance in which knowledge is mobilized to focus on organizational functioning and renewal.

RFP, pp. 3-4

As stated in the Preface, we chose to study three college/university "pairings" with Boston Public Schools, as examples of inter-organizational arrangements established as part of court-ordered desegregation in 1975 for improved education. A college or university was paired with one or more schools or an entire community district, to work in partnership with independent parent/citizen groups (thus meeting the criterion of "three or more" permanent, distinct organizations). Although an exchange and use of knowledge was not an explicitly stated goal of the court-order, it was hoped that the colleges/universities and the schools would derive mutual benefit from a protracted exchange of knowledge and other resources. It was assumed that the pairing partners were each more advanced in their knowledge of how to upgrade certain aspects of education than they were able (for whatever reasons) to put into practice. Through

formal collaboration in "The Pairings", it was further hoped that their joint efforts would serve to narrow this gap in knowledge application, to achieve improved schooling in Boston.

The three College/University-School Pairings clearly fall within NIE's definition of inter-organizational arrangements for school improvement. However, their reflection of NIE's interest in the exchange and use of knowledge resources, as implied in the RFP, was less apparent to us. As stated above, the Boston Pairings were not explicitly established for the exchange/use of knowledge resources, as were examples of knowledge sources given in the RFP. NIE's examples include organizations and agencies established to disseminate "new" knowledge about effective schooling, especially research-based knowledge:

> Two of the programs in DIP (NIE's Program on Dissemination and Improvement of Practice) Information Resources (IR) and Regional Programs (RP) operate, support, or conduct demonstrations of services for knolwedge dissemination and use. To a very large extent these programs involve complex networks of organizations: e.g., the ERIC System; R & D Exchange; R & D Utilization Program projects; state dissemination networks anchored by the state dissemination capacity building projects. There are also many inter-organizational arrangements facilitating the use of knowledge resources which are not sponsored by NIE/DIP. Some are supported by the Office of Education, some by states or other agencies.
>
> RFP, p. 2

NIE's examples of inter-organizational arrangements to be studied include schools and colleges:

> Some examples of organizational networks include the following:
>
> . A school, department, or college of education working with two or more local education agencies to provide inservice training.

But also included are:

- An intermediate service agency providing technical assistance in the implementation of an innovative instructional program in two or more districts.

- An educational laboratory providing training on problem-solving models to state or intermediate education agency personnel, who in turn provide technical assitance for problem-solving in local schools.

- A school study council composed of a number of local districts and institutions of higher education.

- A state education agency and an institution of higher education working with several intermediate agencies to implement a federal program.

- An R & D technical assistance unit within a local education agency providing service to multiple school building units to diagnose the particular needs of each school.

Many of these latter examples consciously attempt to disseminate new knowledge generated by the aforementioned research and development agencies and programs. The three College/University-School Pairings which we studied have few formal linkages to that national/state R & D network, and are thus not heavily invested in disseminating its products. Thus, the extent to which the Boston Pairings do or do not make use of these available knowledge resources is of particular interest in this study.

B. Context of the Study Sites

1. History of the Pairings Concept

On June 21, 1974, Federal District Judge W. Arthur Garrity ordered the desegregation and reorganization of the Boston Public Schools. Under his Court Order, subsequently referred to as Phase I of the Boston Desegregation Plan, the schools were partially desegregated during the 1974-1975 academic year. Phase II went into effect a year later, via a second Order. At the Judge's direction, it included extensive busing,

creation of eight more or less "balanced" community districts and one city-wide magnet district, increased mixing by race of students and staff, inclusion of parent and citizen groups in school decision-making, and (especially salient for this report) mandated collaboration among the school districts, local businesses, local cultural organizations, and the colleges and universities of the Greater Boston region.

Before the Phase II Order, the Court had solicited the general support of the higher education community. Four individuals prominent in education, law, and politics were appointed as Masters to make recommendations for the Phase II plan. The Masters met with seventeen college presidents to discuss university-school collaboration and to give the presidents an opportunity to voice concerns over the proposed plan. The presidents raised questions about potential costs, school people's expectations regarding the university assistance, the kinds of resources to be exchanged, and the time commitments expected. Because the pairing effort was a concept new to all, the Masters could provide only speculative replies to some of these questions. And while many remained unanswered at the end of the meeting, two weeks later each of the participants had written to commit his/her institution to working with the schools in the manner outlined by the Masters. The university-school pairing concept was formally included in the Report of the Masters presented to Judge Garrity on March 31, 1975.

Following the Masters' Report and before the Phase II Order, the college presidents appointed a seven-person Steering Committee to meet regularly with the Judge and Legal Education Committee, formed earlier by three Boston lawyers to provide assistance to Judge Garrity. The Massachusetts Commissioner of Education, Gregory Anrig, notified

the Steering Committee at one of its first meetings (April 30, 1975) that state funding, under Chapter 636, The Racial Imbalance Act, would be available to support pairing activities. This Act had been approved in July of 1974. and provided financial incentives to Massachusetts school districts planning programs to reduce racial imbalance.

2. Basic Elements of the Pairings Arrangements

In the Phase II Court Order issued on May 10, 1975, Judge Garrity made reference to the university-school pairings as follows:

> ...(T)he pairings will create new links and strengthen the old ones between public school students and these institutions of higher education. They can provide a focus for the good will and creative talents and unique resources of these institutions...(P)lanning between the public schools and the colleges and universities is being directed toward the formulation and implementation of programs to provide distinctive, nondiscriminatory education instruction...The significance of this pairing effort is a long-term commitment, a promise to the parents and students of Boston that these institutions, with their rich educational resources, are concerning themselves in a direct way with the quality of education in the public schools...

Garrity further stated that the objectives of the pairings would be:

> (T)o support, assist, and participate in the development of educational excellence within and among the public schools of Boston...(and) to share in the direction and development of curriculum and instruction under court-sanctioned contracts with the School Department. These contracts shall be unique to each institution and its matching school.

Thus, the Court Order formally established a loose set of structures intended to promote resource exchanges between schools and universities. Although the composition and mode of operation could vary among the pairings, the Bureau of Equal Educational Opportunity (BEEO) of the Department of Education established a standard procedure for the development and approval of project proposals to encourage involvement by all members of each pairing. This procedure called for joint planning

by representatives of the paired universities, school districts, and community groups. Proposals thus generated would be scrutinized and approved by a district review panel, the School Committee, and the State Board of Education, for the award of Chapter 636 funds (see Figure 1, p. 8).

This elaborate procedure was developed to process proposals, but very little guidance was offered from any quarter as to the kinds of services or objectives to be included in pairing activities. The Court did establish four broad areas in which proposals should be developed: 1) staff development and training; 2) design of instructional materials and methods; 3) planning and organizational processes; 4) community relations. Other than listing these four areas, however, the Department of Education and the Court left the nature of the desired activities unspecified and undefined. As one Department of Education official stated, "...We stressed a theme which we have continued to believe important: set priorities at the school level, not in the outside institutions which seek to serve schools." (Glenn, 1979).

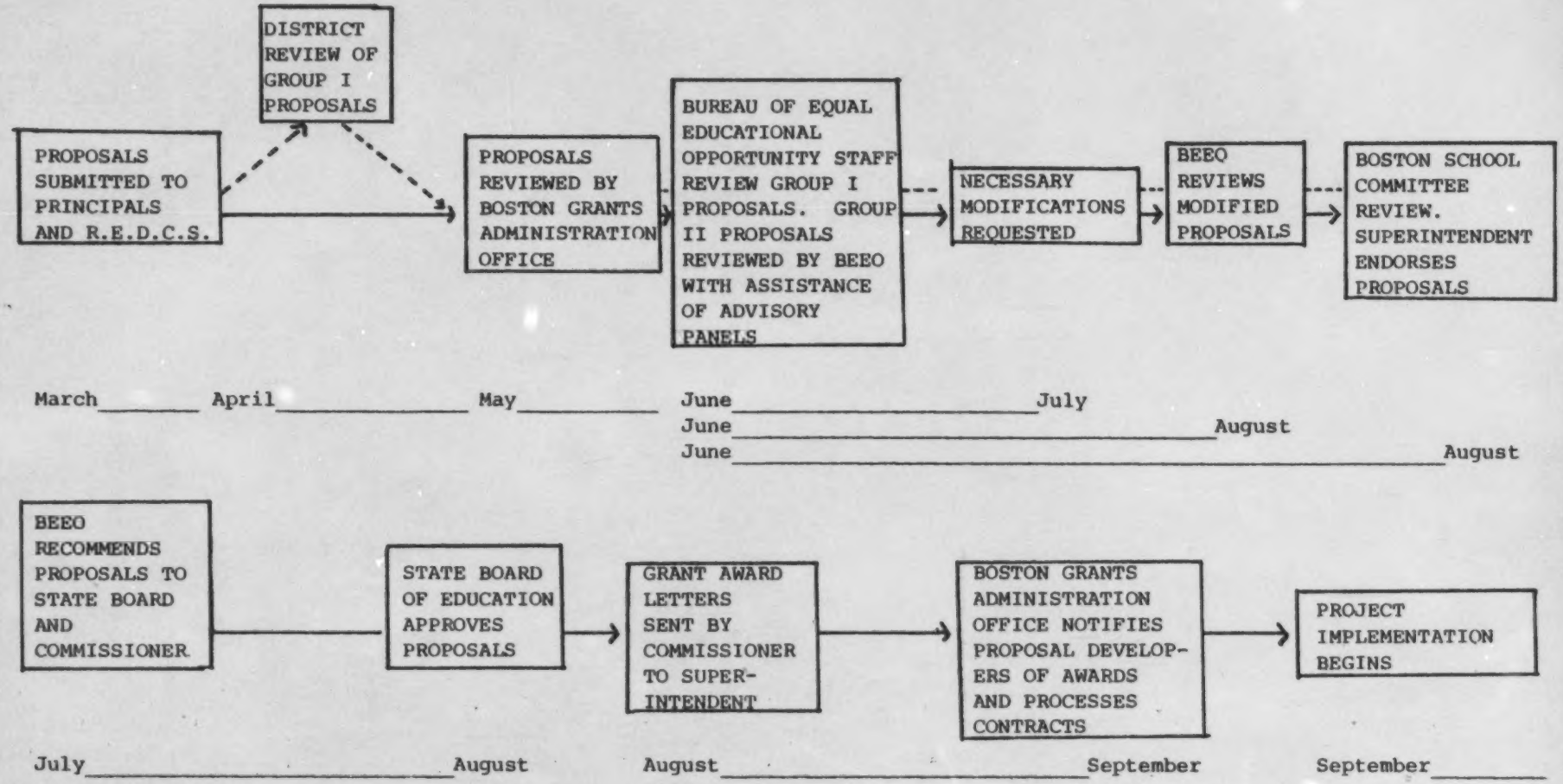
3. Overall Goal of Collaboration for School Improvement

Since most universities and colleges are traditionally, if imprecisely, committed to providing service to the community, pairing relationship offered a vehicle for demonstrating the reality of this often-cited ideal. Encouraging universities and schools to work together to "develop educational excellence" seemed a promising, logical undertaking. Conflict soon developed, however, over the role the universities would play in serving the schools. The universities pictured themselves as providers of indirect services and technical assistance: e.g., offering workshops for school staff, needs assessments, consultation, expert

(MASS. DEPARTMENT OF EDUCATION, 1979)

FIGURE 1

REVIEW PROCESS FOR UNIVERSITY PAIRING PROPOSALS


DISTRICT REVIEW OF GROUP I PROPOSALS
PROPOSALS SUBMITTED TO PRINCIPALS AND R.E.D.C.S.
PROPOSALS REVIEWED BY BOSTON GRANTS ADMINISTRATION OFFICE
BUREAU OF EQUAL EDUCATIONAL OPPORTUNITY STAFF REVIEW GROUP I PROPOSALS. GROUP II PROPOSALS REVIEWED BY BEEO WITH ASSISTANCE OF ADVISORY PANELS
NECESSARY MODIFICATIONS REQUESTED
BEEO REVIEWS MODIFIED PROPOSALS
BOSTON SCHOOL COMMITTEE REVIEW. SUPERINTENDENT ENDORSES PROPOSALS
March
April
May
June
July
June
August
June
August
BEEO RECOMMENDS PROPOSALS TO STATE BOARD AND COMMISSIONER
STATE BOARD OF EDUCATION APPROVES PROPOSALS
GRANT AWARD LETTERS SENT BY COMMISSIONER TO SUPER-INTENDENT
BOSTON GRANTS ADMINISTRATION OFFICE NOTIFIES PROPOSAL DEVELOP-ERS OF AWARDS AND PROCESSES CONTRACTS
PROJECT IMPLEMENTATION BEGINS
July
August
August
September
September

14

15

GROUP I PROPOSALS - UNIVERSITY PAIRING PROPOSALS THAT GO THROUGH DISTRICT REVIEW PANELS
GROUP II PROPOSALS - UNIVERSITY PAIRING PROPOSALS THAT GO THROUGH BEEO ADVISORY REVIEW PANELS

information, etc. The schools, on the other hand, saw educational excellence being achieved through the universities providing direct services to students, credit couses for teachers, and use of campus facilities. Although universities were willing to supply a few of these services, they believed that indirect services would have more profound effects on the system as a whole, and balked at the financial implications they foresaw in the direct services route. Thus, the initially shared commitment to a common goal was soon partially undermined by discrepant views of how to reach that goal. However, as the pairings progressed each developed a personality of its own, characterized by a mix of direct and indirect services among the projects it chose to develop. This point is abundantly illustrated in the three case studies that form the basis of this report.

4. Level and Scope of Involvement

A general notion of the scope of the involvement of the twenty-six universities and colleges is set forth in Figure 2, page 10, for fiscal years (FY) 1975 through 1979, the years of activity reviewed in this report. The three pairings described in the present document are those of Harris University, Dunfey University, and Massachusetts College (pseudonyms). Allotments to these three institutions are broken out in the table, with other universities and colleges assigned arbitrary numerals. Note that all three of the universities studied are active in District H (the magnet district), as well as in the community districts (A, B, and C, respectively--also pseudonyms) with which they were paired. Also, at least one other university was active in each of Districts A, B, and C, despite the offical pairing of each with Harris, Dunfey, and Massachusetts College. These interweavings suggest some of the complexity of the Boston Pairings operation.

FIGURE 2

FISCAL PROFILE OF INVOLVEMENT IN PAIRINGS, BY DISTRICT AND UNIVERSITY

District	University	FY75	FY76	FY77	FY78	FY79
A	Harris	65,852	80,000	226,842	220,821	91,478
	Univ. #14	---	---	---	19,350	20,000
B	Mass. College	60,900	192,310	87,000	82,839	82,430
	Univ. #10	---	---	46,249	46,000	44,160
C	Dunfey	---	---	125,000	89,737	109,625
	Univ. #3	45,715	108,227	89,000	89,000	85,945
	Univ. #7	40,012	79,933	79,000	79,000	75,932
D	Mass. College	---	---	---	3,000	3,694
	Univ. #16	44,940	83,142	93,000	93,000	89,280
	Univ. #23	---	---	13,000	33,456	40,789
E	Univ. #1	49,961	215,916	205,000	163,470	130,000
F	Univ. #17	40,943	107,000	107,000	107,000	102,533
G	Univ. #15	---	---	---	20,060	18,000
	Univ. #20	---	---	19,188	---	5,441
	Univ. 21	51,043	224,021	207,416	200,051	237,000
H	Harris	---	---	16,000	22,228	26,506
(magnet	Mass. College	---	---	1,320	5,638	5,638
district)	Dunfey	62,769	155,000	130,000	131,226	124,706
	Univ. #2	---	---	91,000	91,000	87,360
	Univ. #4	---	---	---	---	25,506
	Univ. #5	34,351	101,797	99,000	99,000	80,118
	Univ. #6	7,492	57,858	57,000	62,000	59,500
	Univ. #8	---	104,245	95,000	95,183	91,200
	Univ. #9	50,000	66,078	79,337	79,965	76,799
	Univ. #10	19,298	47,442	45,000	45,000	43,200
	Univ. #11	27,324	77,871	91,000	91,386	87,338
	Univ. #12	---	146,000	144,997	144,929	139,129
	Univ. #14	37,420	42,520	66,962	73,706	58,524
	Univ. #15	---	---	---	---	27,000
	Univ. #18	60,691	75,095	90,909	103,900	53,399
	Univ. #19	40,000	58,246	49,999	43,434	47,897
	Univ. #20	---	85,951	75,000	75,000	72,000
	Univ. #21	---	---	20,290	17,280	17,000
	Univ. #22	32,050	54,024	53,000	53,384	50,880
	Univ. #23	25,037	47,107	80,275	73,418	101,582
	Totals per year	$595,798	2,252,385	2,583,784	2,554,461	2,411,580

(Adapted from BEEO, Mass. Dep't. of Education: University Partnerships in Boston, Jan., 1979, pp. 25-27.)

A further sense of the nature and variety of activities launched under the pairings program on a city-wide basis can be obtained from Figure 3, pages 12 through 18.

Figures 2 and 3 indicate that the twenty-six colleges and universities, and the school districts or single schools that they are paired with, share varying proportions of approximately 2.5 million dollars in state Chapter 636 money annually (FY 1976 - FY 1979). This averages to approximately $100,000 per pairing, which is also divided in varying proportions between the college/university and district/school in each pairing. After deducting pairing administration and related overhead costs, the remaining funds were available for program operations, which in most cases took the form of many small-scale, one-year projects. Such projects were very diverse in subject matter and scope, and were typically fragmented and terminal. These structural characteristics of the intervention are important to understand, lest the reader incorrectly picture some more massive involvement of the total colleges/universities and total districts/schools in each of the twenty-six pairings.

C. Site Selection

1. Selection of Three Pairings for Case Study

Of the twenty-six pairings, most involved a limited collaboration between a college/university school of education unit with one to a few individual school sites in Boston. We chose three pairings at the opposite end of the scale--pairings with the largest budgets and the most projects; with the largest number of targeted schools entered through a formal arrangement and continual interaction with the district superintendent's office; and with the most sizable college/university involvements. By studying the largest interventions, we hoped to widen the possibilities

FIGURE 3
SUMMARIES OF PAIRING ACTIVITIES, BY DISTRICT AND UNIVERSITY
(Adapted from BEEO, Mass. Dept. of Education: University Partnerships in Boston, Jan.1979,pp.15-23)

DISTRICT	SCHOOL	TYPE OF PROGRAM	DESCRIPTION OF PAIRING	UNIVERSITY
A	all District A schools	Multi-cultural Support	Bilingual instruction in bilingual math projects, occupational awareness, a language to share; multi-cultural education, increased parent involvement, resource dissemination.	Harris University
	all District A schools	Staff Development	A Chapter 766 support program. Training as generic specialist teachers. Two year program of workshops, in-service support and courses.	University #14
B	all District B schools	Supportive Services	Staff development activities, curriculum development, pupil assistance, environmental studies, psychological services, secondary reading assistance.	Massachusetts College
	a high school	Communication Arts	Curriculum development, staff development, courses for pupils, pupils positive reward program, support for pupils with special needs.	University #10
C	all District C schools (elementary and middle)	Developmental Education Program	Social Studies curriculum up-date and implementation, district-wide handbook, math, communication.	Dunfey University
	a high school	Individualized Instructional Program	Learning center for development instruction in basic skills, individualized instruction in reading/writing skills development, and pre-algebra skills building, cultural enrichment and career education programs.	University #3

FIGURE 3 (continued)

DISTRICT	SCHOOL	TYPE OF PROGRAM	DESCRIPTION OF PAIRING	UNIVERSITY
C	a high school	Basic Skills Development	A multiple approach to learning, workshops for teachers on issues relating to special needs pupils, parent outreach, tutorial assistance, reading program, career education, math-computer program, early childhood program.	University #7
D	all District D schools	Staff Development	A Chapter 766 support program two year training program for teachers as generic specialists. Training for parents, administrators.	University #16
	all District D schools	Language Arts	Workshops for teachers and in-class support activities to develop teacher skills and techniques, activities to integrate language arts in entire curriculum.	University #23
	an elementary school	Diagnostic Prescriptive Program	Diagnostic prescriptive program for teachers, in-service training, media approaches and development, diagnostic instrument development, media approaches to basic skills instruction.	Massachusetts College
	a high school	Supportive Services	Direct supportive services to pupils in enrichment reading, tutoring, pupils initiated activities, curriculum development in basic skills, expanded opportunities.	University #16
E	all District D schools	Technical Assistance in Supplementary Educational Programs	Establishment of Diagnostic classrooms, training of generic specialist teachers, diagnostic prescriptive reading, student leadership, parent training outreach, collaborative orientation, planning for the talented and gifted.	University #1
F	District F schools	Staff Development	Training and support services in mainstreaming special needs pupils, preparing assessments and plans, career education.	University #13

FIGURE 3 (continued)

DISTRICT	SCHOOL	TYPE OF PROGRAM	DESCRIPTION OF PAIRING	UNIVERSITY
F	a high school	Supportive Development	Enrichment program in the areas of academics, culture and human relations; reading, multi-media arts and crafts and art center drama program; career and college counseling; Big Brother/Big Sister college bound program, career education; outdoor action, attendance outreach.	University #17
G	all District G schools	Instructional and Pupil Support Program	District VI resource center, Diagnostic resource program; multi-cultural arts and education; tutoring; instructional support and multi-cultural resource center.	University #21
	a high school	Staff Development	A two-year master's degree program for teachers that emphasizes the use of problem-solving techniques in an inter-disciplinary organization.	University #15
	a high school	Support Staff Development	A field based Bachelor of Arts program in community services especially designed for the support staff.	University #21
H	an elementary school	A Creative and Innovative Language Arts Program	Language Arts; special events assembly; individualized reading; language arts fair; creative writing journal.	University #9
	an elementary school	A Science Enrichment Program	Individualized instruction in Science, reading, enrichment programs in science, reading, physical education.	University #23
	an elementary school	A Total Communication Project	Basic program for instructional support in language/communication, staff development, parent outreach, motor skills development.	Harris University
	an elementary school	A Support and Development Program	Mainstreaming program, basic skills-math, music enrichment, parent involvement, library.	University #23

FIGURE 3 (continued)

DISTRICT	SCHOOL	TYPE OF PROGRAM	DESCRIPTION OF PAIRING	UNIVERSITY
H	an elementary school	An Academic Enrichment Program	Enrichment and skills reinforcement support program, reading, parent communication, parent volunteers in school activities, library, psychological services.	University #9
	an elementary school	A Basic Skills and Extended Kindergarten Program	Emphasis on basic skills for low achievers, tutoring, extended day kindergarten, parent outreach.	University #23
	an elementary school	An Expressive and Performing Arts Program	Non-verbal learning opportunities that include instruction in music, guitar, physical education; a language of all cultures project.	Harris University
	an elementary school	A Staff Development Program	Expansion of existing school programs, supplementing current school staff, extended programs in science, physical education, parent involvement, library multi-cultural program, tutorial, special needs, resource parent program, guidance internship.	University #6
	an elementary school	A Basic Skills Development Program (with parental involvement)	Combination of open and traditional educational methods, maximum development of basic skills and enhancement in math, reading and writing.	University #4
	a middle school	A Language Arts Program	In-service courses in Language skills development, career exploration and resources, parent involvement, curriculum sharing and development, bilingual resources, math skills, and skill related technical assistance.	University #8

FIGURE 3 (continued)

DISTRICT	SCHOOL	TYPE OF PROGRAM	DESCRIPTION OF PAIRING	UNIVERSITY
H	a middle school	An Arts and Humanities Program	Core curriculum with emphasis on individualization and basic skills, fine arts, arts apprentice, language arts, creative writing, journalism, human dynamics, health education program, life science, social science, individualized learning, artist-in-residence, student performances.	University #11
	a middle school	A Career Education Program	(1976-78) vocation seeking skills improvement, mini-boutique, industrial crafts, food service and hospitality, video, career information center, curriculum development, math, library.	University #18 (1976-78)
			(1978-79) indoor garden emporium, developmental writing and library programs.	University #15 (1978-79)
	all non-examination high schools	A Guidance Counselling Program	"Another Course to College" career and guidance counselling, course in career awareness and study skills and habits, staff development, career resource.	University #21
	a high school	A Supplementary Support Program	Remedial tutoring in reading and mathematics.	Massachusetts College
	a high school	An Educational Support Program	Support services in a variety of academic subjects, tutoring, pre-admission program, Regis Campus program, multicultural program, enrichment courses, communications and human relations.	University #14
	a high school	A Career-College Preparatory Education Program	Career and college counseling, the arts, languages, mathematics, computer technology, athletics and special events, summer orientation and instruction program, tutoring, college courses for seniors.	University #22

FIGURE 3 (continued)

DISTRICT	SCHOOL	TYPE OF PROGRAM	DESCRIPTION OF PAIRING	UNIVERSITY
H	a high school	A Curriculum Development Enhancement and Modification Program	(1976-78) computer science, engineering explorations, science explorations, drama and reading. (1978-79) reading in the content areas, computer science.	University #19
	a high school	A Basic Skills Development Program	Intensive and direct support for pupils in basic skills in mathematics, reading, and comprehension. Tutorial and in-service programs.	University #18
	a high school	A Communication Arts Program	Communications skills improvement through programs in mass communication, speech, developmental reading, theatre, career education, affective education and greater parent involvement.	University #5
	a high school	An Individualized Supplementary Instruction Program	Individualized and Supplementary instruction in mathematics, remedial, supportive tutorial help, in-service training, career exploration in mathematics.	University #18
	all District H schools	A Tutorial Teacher Aide Program (English Language Center)	Supplemental support service to teachers tutorial to non-English speaking immigrants, developmental education, cross-cultural interaction program.	University #6
	all District H schools	A Staff Development Program	A Chapter 766 support program in-service training as generic specialist teachers, program development.	University #14
	a high school	A Theatre Arts (MODEL) Program	Methods of developing effective learning, Theater Arts curriculum development, theater arts for bilingual pupils, occupational skills through theater arts, parental involvement.	University #2
	a high school	Career Exploration within the Art Curriculum	Extensive Art program course offerings, staff/curriculum development, career education and exploration.	University #10

FIGURE 3 (continued)

DISTRICT	SCHOOL	TYPE OF PROGRAM	DESCRIPTION OF PAIRING	UNIVERSITY
H	a high school	A Staff Development Program	Development of effective learning programs, staff development, curricula development, center for secondary educational options, direct pupil services, alternative resource center.	University #20
	a high school	Support in Several Subject Areas	Improvement of performance standards of both pupils and faculty, basic skills, mathematics tutors, social studies curriculum development, music and theater, media and communications, science, physical education, bilingual program, parent outreach.	Dunfey University
	a high school	A Secondary Technical Education Project	(1976-78) Aviation technology, computer science, environmental science, electronics, instrumentation, medical technology, environmental science. (1978-79) Curriculum revision and staff development, program development (Social Studies/Humanities) skills development, career awareness, scientific and technical services, extended computer capability, and media technology.	University #12

18

of finding interesting episodes of knowledge flow/use for school improvement, within the maximum complexity of this rather elaborate, court-ordered structure.

The pairings thus selected for this study are: Harris University and District A, Dunfey University and District B, and Massachusetts College and District C. (Institutions and districts are given fictitious names in this report. Pseudonyms are also used for persons and schools within the districts.) They were chosen and included in TDR's proposal, with prior agreement to participate should TDR be funded. Making such arrangements was facilitated by TDR's prior involvement as evaluators of selected aspects of these pairings. That prior involvement was also useful in selecting three cases that are reasonably comparable. For example, each pairing is a part of the program mandated by the Federal Court. Each includes a college or department of education housing some faculty and staff who customarily work with schools. All depend on the same pool of state funds and operate under common city and School Department regulations and procedures. Each school district is roughly the same size, with a similar distribution of senior high schools, middle schools, elementary schools, and magnet schools/programs. Each functions under a district superintendent newly assigned in the Court's reorganization of the School Department. Their common characteristics are numerous.

Yet we believe that the differences among the three pairings are significant and worth examining. The three collaboratives vary internally in their ways of shaping the overall pairing effort, in the backgrounds and orientations of pairing personnel in the three sectors (school, university, community) which comprise them, and in the history of each university's relationship to the schools to which it is assigned.

Most graphically, the three universities differ considerably in essential characteristics, as the following summary shows:

Harris University

1. intermediate-sized private institution, with internal organization by colleges
2. newly committed to activities in and for the city
3. minor and new orientation to field-based education; national faculty
4. intermediate in diversity of student body
5. centralized decision-making

Dunfey University

1. large private university, with internal organization by colleges
2. committed since founding to activities in and for the city
3. comprehensive and long-standing commitment to field-based education; faculty both local and national
4. heterogeneous student body
5. decentralized decision-making, with heavy middle management involvement

Massachusetts College

1. intermediate-sized public institution, formerly a teachers college with internal organization by department
2. originally founded by the city, and long-standing commitment thereto
3. commitment to field-based education; many local faculty
4. homogeneous student body (working class city families)
5. decentralized decision-making

Perhaps most supportive of the claim that the pairings may be usefully treated as separate entities are the case studies themselves. Even a hasty perusal will convince the reader that each pairing followed a separate course, responding to different internal and external pressures. Each dealt contrastingly with the issues of knowledge flow and use, inter-organizational relations, and the distribution of power discussed within this report. Further analysis of their similarities and differences, and the consequences of their characteristics, are treated in subsequent

sections of the report.

2. Selection of Pairing Activities for Study

As stated above, a range of discrete "projects" comprised the primary operational unit of the Boston Pairings. A project is a series of connected activities among the partners concentrated in a particular area (e.g., physical education, curriculum development, teacher training for reading instructors). Within each of our three "cases" (pairings), we set out to select four projects. The structure and time span of the projects thus selected varies greatly within and among the Pairings. To increase comparability, each case writer was to select one project from each of four general areas: increased equity among school children in the district, physical education and/or experiential learning, basic skills, and communication within the Pairing. However, in the Massachusetts College-District C Pairing, the fieldworker could not find a communication project; she replaced it with a second basic skills activity. The same problem and solution occurred in the Harris-District A Pairing. Also, project boundaries in the latter collaborative sets of activities were eventually identified for analysis. After assembling from the records of the Pairing a list of projects sponsored by the collaborative, the fieldworker discussed them with the University Coordinator, who assisted him/her in making final choices. The four selected for each Pairing are:

Harris University-District A

1. Movement/Multicultural
2. Developmental Reading
3. Reading Support Team
4. Student Placement

Dunfey University-District B

1. Multicultural Curriculum
2. Student Publication
3. Basic Reading Skills
4. Physical Education

Massachusetts College-District C

1. Elementary Math Assistance
2. Math Assistance
3. Student Assistance
4. Environmental Studies

In addition to four project descriptions, each case writer contributed a fifth piece describing other activities that were a part of the Pairing but not funded by Chapter 636 monies. This section provides a description of the context of activities within which the non-636 projects took place. Finally, each field worker examined the data of his/her case study in relation to the basic questions of the research project, such as the types of knowledge transferred, and the inter-organizational arrangements employed.

D. Approach and Methods

1. Study Staff

We decided to employ "insiders" as the primary data-gatherers in the study, and to have their work reviewed by members of the Pairings as a check on staff bias. The Principal Investigator had participated in some of the earlier projects and meetings of the Harris-District A Pairing five years ago. Among other activities, he conducted workshops for parents and community leaders on power and the users of power in bringing about changes in schools. He enjoyed a long-standing relationship with the University Coordinator at Harris, and had conducted projects in District A for some years before the Court paired it with Harris University.

The case writer for the Harris-District A Pairing was a faculty member in the Harris School of Education, and one of the liaison persons assigned by Harris to the high school included in the Pairing. He was also a graduate of that high school and had remained in close contact with it since leaving. His office at the University adjoined that of the University Coordinator.

The case writer assigned to Dunfey and District B was the recipient of a post-doctoral fellowship from Dunfey, which partially funded his participation in this research. As a Fellow, he conducted other studies unrelated to the present project. His office and that of the Dunfey Coordinator were also close to one another; they developed a close professional relationship during the researcher's year at the University.

The case writer for Massachusetts College and District C has been a staff member of the unit of the College that was headed by the College Coordinator, in addition to his duties in the Pairing. She had not participated in any pairing activities, although she shared an office with staff members employed by the Pairing.

The two senior study advisors were familiar with the Pairings and had participated previously in other activities with school people, parents, and university persons involved in the Pairings. One study consultant was a graduate of Harris University, and another was a faculty member at Dunfey. In addition, TDR had previously conducted many small-scale evaluations of projects sponsored by these three and other pairings in Boston, under separate contract.

Insofar as can be determined, the personnel of the Pairings respected the study staff and saw them as investigators genuinely interested

in these school-university-community collaborations. At the same time, we acknowledge that this familiarity and essentially positive stance may have introduced a degree of bias into their observations, and influenced the kinds of information given to them in interviews. Further, since the investigators knew some of the Pairing participants and the processes established amongst them, they may have overlooked and not reported some "obvious" aspects of the Pairings that were commonly known to all. "Fish are the last to discover water," is an old saying that summarizes this situation.

2. Data Collection and Controls Against Bias

The methodological challenge was to minimize bias and magnify objectivity in the case studies, while maintaining the advantage of using researchers who are informed observers of a complex process, rather than uninvolved and initially ignorant bystanders. Several efforts at bias reduction were employed. None of the study team was actively involved in the operations of a pairing during the period of the study, and none had participated in the past in any of the particular projects selected for intensive study.

At the beginning of the study, the staff held regular weekly meetings to create an operative framework for interviews and other data-gathering. Behavioral meanings and indicators for the various "knowledge types" were thrashed out over and over, until each fieldworker, as an eventual case writer, could be fluent and intelligible on such matters to other members of the team.

The formal hypotheses set forth in our proposal were not used as salient features of the research enterprise for the fieldworkers. They were to immerse themselves in the phenomena and "let the informants

set the framework" for what they saw and how they acted in the Pairing. The intention was to obtain "triangulations" of the perspectives of university, school, and (as appropriate) parent/community persons. In writing the case, however, there was no requirement that all three perspectives receive "equal time"; the case studies could describe the project or pairing from one of these frameworks, with due exploration when significant differences in interpretation had been recorded.

Each fieldworker sought out and interviewed "key respondents"; Pairing participants and others connected with the Pairings and the projects studied. Typically this included the college/university and school coordinators, project staff, staff of the target schools, and other members of the colleges/universities, school district and central office administrators, and funding agency staff. Given the complex structure and extensive organization/agency involvements in the Pairings, the interconnected web of entanglements is seemingly endless. To follow the most significant strands related to the focus of this study, the field workers started with those in key administrative positions, asking them among other things to nominate additional interviewees who played important roles in the project and pairing under scrutiny. They in turn were asked to nominate others, and so on until the trail consistently led back to its origins and became circular.

Each of the fieldworkers reported regularly in staff meetings about his/her interviews and observations, eliciting comments and suggestions for further inquiries from his/her colleagues. Toward the end of the first round of interviews, each writer wrote a rough first draft to capture the essential picture from the wealth of details available, and to begin the development of a common framework for the

final reports. One of the senior project consultants experienced in case study methodology reviewed these drafts and made suggestions about further inquiry and their style and content. A second, briefer round of fieldwork followed.

At this point the staff developed and adopted a common general outline for the case studies that drew upon a framework created early in the project but that also reflected the experience gained during the months of fieldwork. The staff also reviewed the formal hypotheses and classification of knowledge types, giving data and examples from their field experience in support of, or contrary to, these theoretical formulations. However, no systematization was attempted that would shape the cases and the projects included in them as deliberate tests of the formulations. We were interested in the richness of the phenomena as they occurred and tried not to impose a writing task that required the investigators to supply certain data at the cost of losing narrative continuity. We reminded ourselves that we were aiming at case studies that could be used in several ways, perhaps even freestanding as teaching material, and not only in this research project.

A panel of key respondents and other representatives from each of the pairings reviewed a near-final draft of this report, as a further control on bias and possible inaccuracies. Helpful but minor factual corrections emerged from this session. In general, the discussion was searching, cordial, and supporting of the findings and recommendations.

The project descriptions became the source material for the case studies and the cross-case analysis. The cross-case analysis is based almost entirely on the case studies and their component project

descriptions, with only occasional references to material and data outside of them.

3. Cross-Case Analysis

There were numerous difficulties in coordinating and writing case studies that would readily lend themselves to comparative analysis. Differences in the School-College/University Pairings, district personnel, and project focuses (or foci), and interests of the case writers themselves resulted in a rich but diverse body of information. After some discussion, original hypotheses and study questions were revised, and a preliminary cross-case analysis was prepared. This working paper provided initial insights and findings, particularly around the problem of knowledge use, and pointed to several issues which became the basis for the present analytic framework.

Several discussions followed the presentation of the working paper, and suggestions for further refinement were proposed by readers at TDR and the NIE. Based on these discussions the cases were reexamined several times, and common issues and themes were extracted from them. Drawing from internal working papers, memoranda, and from the literature on network analysis, inter-organizational behavior and knowledge use, an inter-systems model was developed to serve as the conceptual framework for the cross-case analysis (see Section II). The model was subjected to several revisions and refinements as the result of discussions with the study staff, careful reexamination of the cases, and consultation with the project monitor at the NIE.

In preparing the cross-case analysis, a code was developed to identify various components, elements and characteristics of the inter-systems model (see Table 2, p. 172, of Appendix A). The three

cases were then reread and each paragraph of each case was subjected to content analysis, identifying information pertaining to the conceptual framework. During this process, data that might disconfirm the model's applicability was also sought. After coding each case, a cross reference code was developed and the data was systematically reorganized and placed into relevant sections of the model (see Appendix A, p. 170). Through this process, the efficacy of the inter-systems framework was tested, hypotheses were generated, and this analysis was undertaken.

II. CONCEPTUAL MODEL

A. Developing an Analytic Framework

As stated in the preceding section the analytic framework used was continually expanded and refined concurrently with the data collection and analysis and beyond, well into the cross-case analysis. As we proceeded, we became more and more impressed with the degree to which the case material reflects the structural characteristics of the Pairings, and various historic, contextual multiple process factors. We find the use of an analogy to chemistry triggered special insight into the intent, purposes and effects of the Pairing plan. By viewing the Court's actions as an attempt to bring different organizations and sub-systems together to create new "compounds", we can see how the organizational elements and Court structure interacted to form various "reactions and results". Inherent in the plan, and the Court's announcement, was the assumption that a structure and mandate would be sufficient to precipitate a melding of various institutions (elements) into an inter-organizational entity which would possess "new" properties and positively affect the quality of education over the "long term" (i.e., new, stable compounds).

The evidence gathered from the three case studies indicates that, while some interaction and reaction took place, the emergence of new, stable compounds was seldom apparent, at least during the time period under investigation. Indeed, there were new arrangements and programs created, but these efforts tended to be fragmented, and were of short duration and effect. If compounds were created, they appeared to be random, and highly unstable--quickly returning to their constituent elements (or component parts). There seems to be evidence to support the notion that the Pairing effort did

promote a mixing of various inter-organizational elements, but lacked sufficient mechanisms, catalysts, or time to precipitate and maintain new inter-organizational arrangements having an enduring identity which was separate and distinct. In short, it might be asserted that, in the case of the Boston Pairings, the whole was never more than the sum of the parts.

It must be kept in mind that, with the exception of the school system, which was itself partitioned or sub-divided into nine community districts and individual school sites, the level of effort and investment of any of the participating institutions varied, and, at best, represented only partial and often peripheral involvement in the Pairings. A common misperception regarding the Court's plan is that "the whole" college or university was to engage with "the whole" school district in a "massive intervention". Nothing even close to this happened. At most, individual or small groups of College/University faculty (and sometimes students) from selected departments, worked for a few months with individual or small groups of staff (and sometimes students) in selected Boston schools. Thus, in this systems model, each major component has parts (sub-systems) interacting with other parts (sub-systems) of other components (see Figure 4, p. 32).

Indeeed, the Pairings brought together two or more sub-systems or complex organizations through an imposed Court Order, with one component (the schools) having no choice about entering into this association. The individual schools were never seriously consulted before the Court mandated the Pairing arrangement amid much publicity and fanfare. Even the idea which precipitated the Pairing plan was external to the public education system

(see Dentler and Scott, 1981, pp. 31-35). While each institution was expected to put all of its relevant resources at the disposal of the other(s) this assumption was far from met in the inter-organizational experience. Therefore, the concepts needed for anlaysis of the inter-organizational arrangements of the Pairings must differentiate between the varying levels of interaction and involvement and must include many different aspects of both Universities/Colleges and Schools.

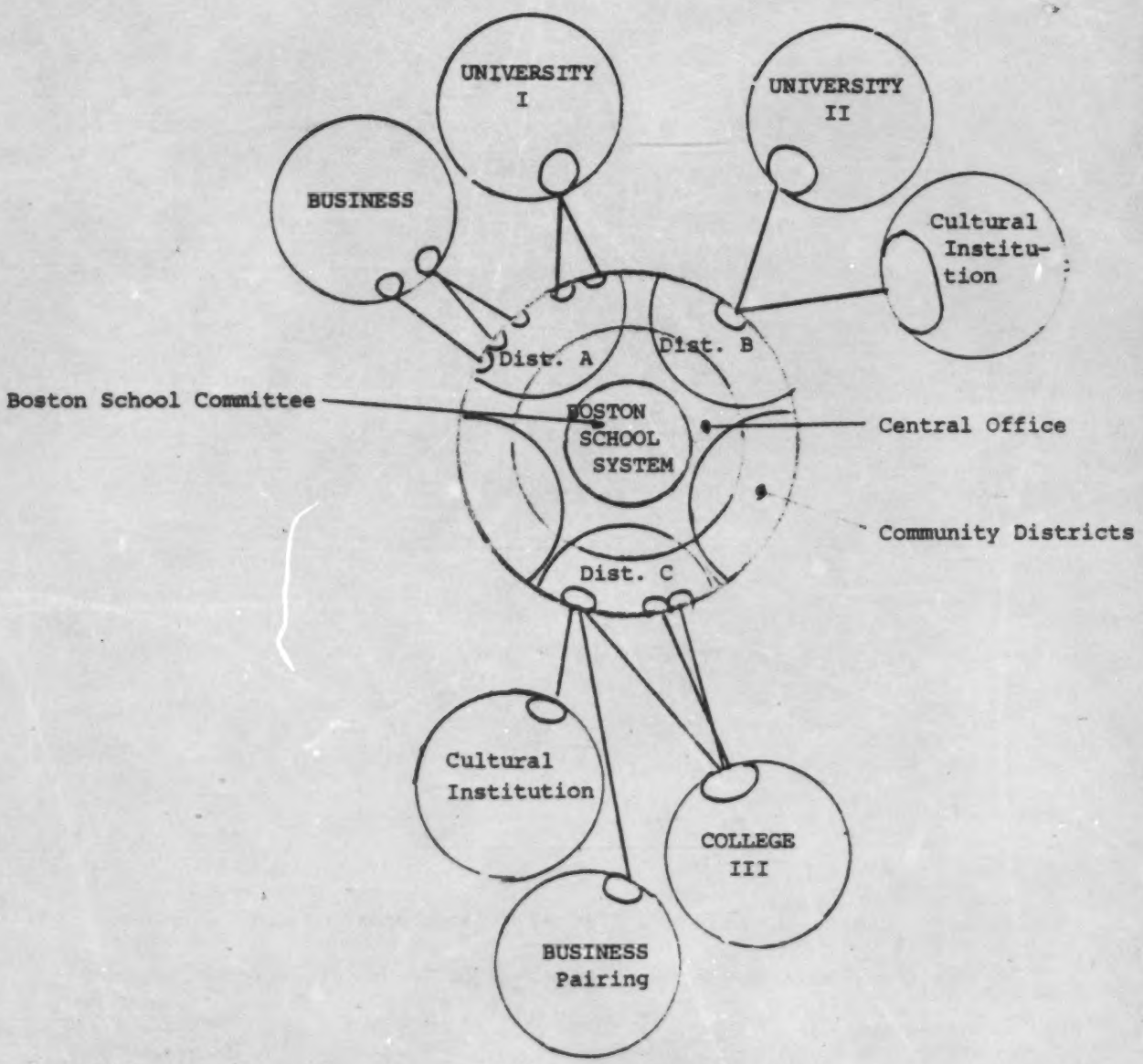
In investigating each of the Pairings, the area of inter-organizational involvement and interaction was further circumscribed by projects. Projects were the functional consequence of a complex series of structural, environmental, and behavioral factors which tended to limit the scope of interaction, resources, and uncertainty involved in the Pairings. So pervasive was the phenomenon, that the terms "pairing" and "projects" were often used interchangeably by the participants and became synonymous in the minds of participants and investigators alike. It is not surprising, therefore, that the project became the unit of investigation and analysis for each of the cases herein presented. (It was similar in all districts and schools involved in the School-University/College Pairings.) Nor, as shown in the cross-case analysis, was it unusual that, due to numerous factors, the projects were unable to combine and build upon each other in a way that would accelerate change in the client systems. They tended to remain isolated, fractionated, and highly differentiated in each of the cases examined.

B. General Inter-Systems Model

In searching for a conceptual framework with which to tie the cases together and also explain the relationships which we found between inter-organizational arrangements and knowledge use in public schools, we

FIGURE 4 The Boston Schools and the Business-Cultural-University/College Pairings: A diagram of sub-system interactions

The Court/Experts/Masters/Steering Committee/BEEO/Lincoln Filene Center



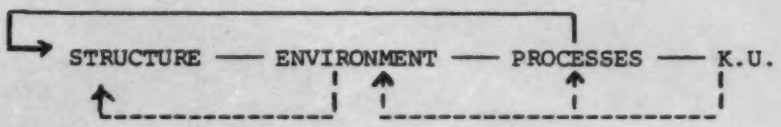
considered several possibilities. First, we could have employed a model treating the inter-organizational arrangement as a newly created organization serving new functions in its environment, taking on a life of its own, and becoming a regular feature of the organizational landscape. As stated above we found no evidence that the inter-organizational arrangements represented by these Pairings have reached or necessarily will reach this level of development. Therefore, such a model for analysis was inappropriate.

A second model for describing and analyzing inter-organizational arrangements treats them as a system performing diffusion and dissemination ("linking") functions among existing organizations. Diffusion and dissemination units such as knowledge dissemination centers in state departments of education link developers of knowledge in research and development centers, regional laboratories, ERIC programs, etc. with educational practitioners. Trained and specialized change agents, transmitting and transforming objects and bits of knowledge to fit the needs of participants, are key pieces of this model. We found limited evidence of this kind of activity in the three cases in Boston that we studied.

Ultimately, we selected a systems model to represent the way in which various organizational parts (sub-systems) interact within a complex social/political system (the urban environment) to promote the diffusion and use of knowledge for the improvement of educational practice and equity.

The conceptual model represents an inter-organizational system in which both long- and short-term feedback are present. In its simplest form, the model asserts that knowledge use (i.e. the application of

information/ideas gained in the transfer and exchange of knowledge between Schools and Universities/Colleges for the improvement of educational practice), arises out of structural arrangements which generate "inputs" that are mediated by historic/environmental filters or lenses which bias or block the perception and effects of these inputs. The filtered inputs, in turn, are subjected to complex stages of negotiation, interaction, and implementation termed processes:



_____ Direct (inputs)

------- Indirect (feedback)

The system is interactive, dynamic, and time-dependent, in that each component influences the other through inputs and feedback over time.

Using this system framework, we: 1) examine one aspect of the Court mandated inter-organizational arrangements--Universities/Colleges, and individual community districts; 2) focus on the functional component of the Pairings--projects--as the unit of investigation; and 3) use only relevant parts of each participating institution in the analysis that follows. This is a model that stresses inter-relationahips between different parts of Universities/Colleges and different parts of schools to explain the Pairings. Despite the limited scope of our investigation (vis à vis the total range of Pairings in the Boston Case), informal conversations with other participants and other research on the Pairings make us confident of the efficacy and applicability of the model presented.

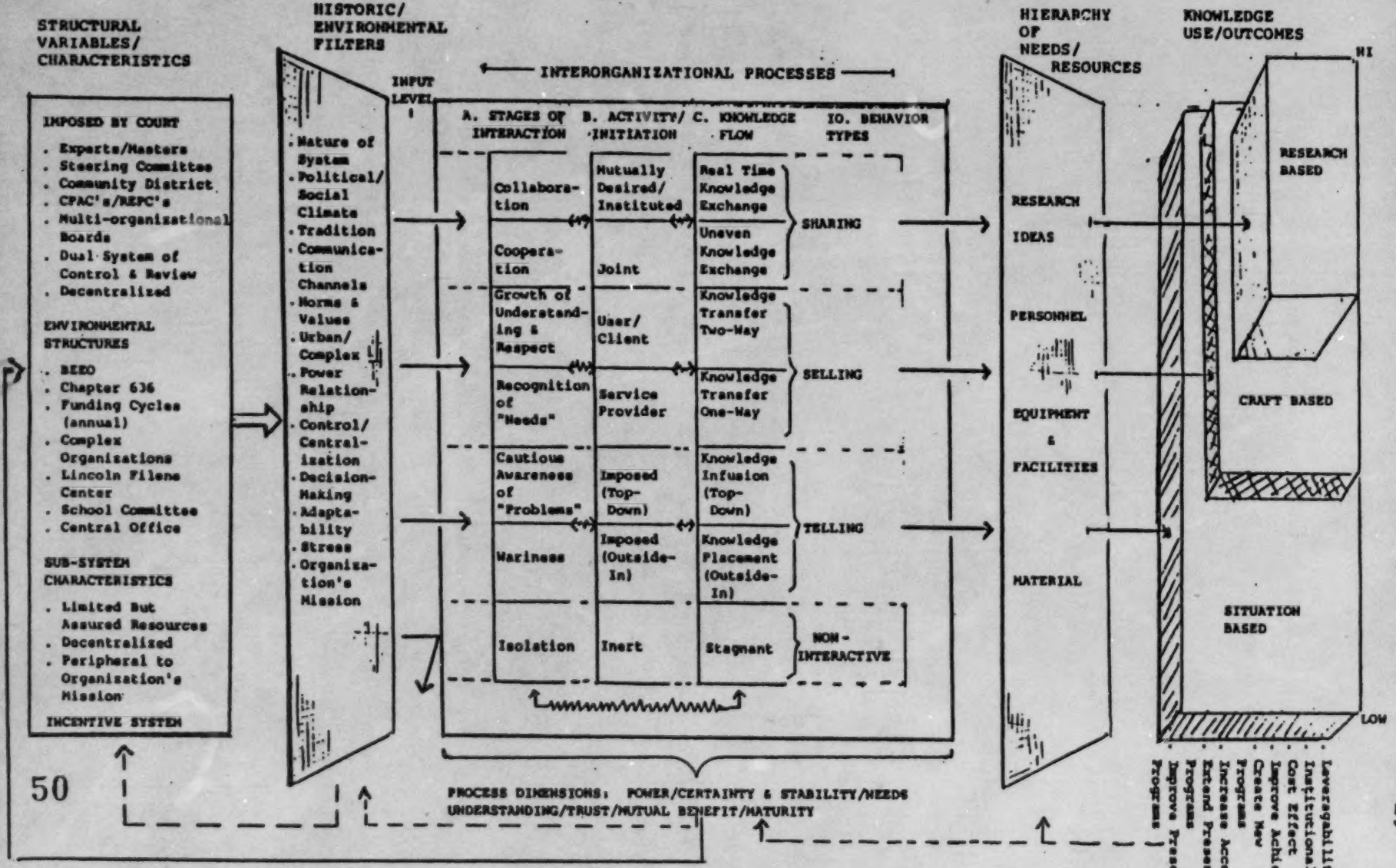
In the more complex model below (see Figure 5, p. 36), the four major segments of the model: structure, environment, processes, and knowledge use/outcomes, each contain various factors and features which create a conceptual framework for the cross-case analysis. Between processes and knowledge use/outcomes, we have inserted a fifth segment, a hierarchy of needs/resources, which is discussed below. Together, they provide a basis for explaining and interpreting the relationship between structure and function that operated in the general inter-organizational environment. It is a means of understanding the political economy of inter-organizational arrangements as they operated in a complex institutional/urban setting.

C. Conceptual Model of Inter-Organizational Arrangements for Knowledge Use in Urban Settings

The basic assumption underlying the model is that the Court Order, when coupled with other structural variables and historical/environmental features, determined the manner in which the Pairings functioned and the nature of the outcomes and levels of knowledge utilization. While we do not pretend to embrace a strict structural/functional view of all organizational behavior, we do maintain that the background events, and outcomes involved in the Boston Public Schools-University/College Pairings are best explained and understood from a structural perspective. This point of view is shared by Dentler and Scott, the Court appointed experts in the Boston Desegregation Case, in their recent book Schools on Trial (1981):

> The Plan involved a complicated network of participants, from the Bar Association, to business and industry, to the colleges and cultural agencies, to parent councils...In short, the plan was long on legal remedies, demographics, geographic boundaries,

FIGURE 5: Conceptual Model of Inter-organizational Arrangements For Knowledge Utilization in Urban Settings



facilities, and organizational structures. But it was short on providing for "practical" remedies involving race relations, curriculum and instruction, and the content of participation (p. 46).

1. Structural Variables/Characteristics

The Court Order mandating the District-College/University Pairings created certain structures which exerted a profound influence on the development and consequences of the resulting inter-organizational arrangements. These structures, such as the Steering Committee, the Trilateral Council, Community School Districts, CPACs and REPCs, entered a field of existing structures such as the BEEO, Boston School Committee, Universities and Colleges. These organizations had and developed certain modes of operation and qualities which we hereafter refer to as "characteristics". Important characteristics of the organizational structures were their levels of control and decision-making, their complexity, the degree to which they were coordinated or decentralized, and the extent of their involvement in the Pairing arrangements.

In general, the characteristics of the structures in the system are: 1) a direct result of the Court Order; 2) a consequence of preexisting mechanisms and structures; 3) a function of the sub-systems; or 4) some combination of the above, such as the incentive systems. The Desegregation Case which resulted in a system which was imposed via the Court (outside-in) was perhaps the most significant factor influencing the structure of the Pairings.

2. Historical/Environmental Filters

An important component of the model is the role that historic and environmental factors play in influencing the way in which the structures

function or are perceived. These factors ("filters") serve to screen, dilute, bias, reshape, or block the effects of structural elements through a system of unobtrusive controls (Merton, 1957), which, in turn, result in a series of unanticipated or unintended outcomes (at least in terms of the expectations of the Court and planners). These factors provide the context and background upon which the case studies are placed, and are constantly interacting with the more manifest/formal behaviors and arrangements. These various elements create an organizational environment with particular cultural/historic characteristics that can either facilitate, complicate, or effectively block the way in which any structure functions. Increasingly, researchers in organizational behavior are coming to recognize the importance and influence of these factors on the process of organizational change, development, and behavior, especially in complex settings.

3. Inter-Organizational Processes

The core of the systems model presented, contains a series of inter-organizational processes, grouped into three general categories, stages of interaction, activity/initiation sources, and types of knowledge flow. Each category, in turn, is divided into seven stages or levels, representing the evolution of inter-organizational arrangements and knowledge flow/use over time. These process categories are set within the context of certain process dimensions, which are discussed below.

a.) Stages of Interaction

This category represents the developmental stages organizations go through as they interact over time. The cells are similar to the stages Bennis and Shepard first used to identify the

process of group development (1956). They are developmental because the higher stages of interaction evolve from or build on lower stages, and this progression is time related. The stages range from isolation (non-interaction) to collaboration.

- Isolation - organizations tend not to interact. The environment is highly segmented and fractionated, and characterized by an absence of behaviors, incentives, and structures for interaction.

- Wariness - partners tend to perceive each other as covert and declared enemies, or as possessors of attitudes, power, or behaviors which are not supportive and may affect the interaction adversely.

- Cautious Awareness of Problems - the perception on the part of partners, that there are issues which might form the basis of an interaction although it is only dealt with generally for lack of confidence in the other pairing partners.

- Recognition of Needs - moving from an awareness of general issues to more specific problems, partners attempt simple projects to assist the client/user organization. Some power/intention myths are dispelled but there are still low expectations about the pairing's ability to work.

- Growth of Understanding and Respect - on the basis of simple projects, partners begin to realize that the other's intentions are benign, and that there are genuine problems which have to be addressed. Larger projects are undertaken and participants find their partner's motive and skills worthy of respect and support.

- Cooperation - partners feel that they won't be abused by their opposites, and willingly begin to study each others' organizations to determine what resources and skills can be brought forward to deal with the problems of the pairing.

- Collaboration - partners are secure in their mutual ability to manage the network, and attempt to influence the evolution of policy and attitudes in their respective organizations, the inter-organizational structure and the general environment. Organizational identities become blurred and a system of dual alliances and new structures emerge to reinforce and perpetuate the interaction.

b.) Activity/Initiation Sources

This category refers to the various actions, mechanisms, and arrangements that are employed to bring organizations, resources, and ideas together. This process category identifies the directionality of resource/activity flow and the origin of various projects and inter-organizational efforts to improve schools. The sources range from inert to mutually desired.

- Inert - attempts to precipitate inter-organizational activities which are dropped on the systems without incentives or structures or requirements for their implementation.
- Imposed (Out-In) - those activities and inter-organizational arrangements imposed or mandated by some external agent or institution.
- Imposed (Top-Down) - those programs that are required or requested by individuals of authority within participating organizations. They may originate at the school site, university, or district level.
- Service Provider Initiated - an inter-organizational project or program which is initiated by a provider to deal with either one of their needs or one of the perceived needs of the client-receiving system.
- User-Client Initiated - a program initiated within the school system itself to deal with needs that the school people feel they have in coping with certain problems of education, integration, and equity.
- Joint - a program or project which could be initiated on either or both sides of the pairing because of the level of understanding and trust or maturity between the pairing partners.
- Instituted/Mutually Desired - a series of activities and programs which are promoted by an emerging "third institution" --the collaborative. Participants hold equal status and desire to support the inter-organizational arrangement through a system of dual alliance.

c.) Knowledge Flow

The process by which knowledge (information, ideas) moves from individuals or groups in one organization to individuals and/or groups in another organization (inter-organizational) or individuals and/or groups in the same organizational system (intra-organizational). This category is mainly concerned with the type of knowledge involved in the interaction (situational, craft, or research) and the method utilized to determine or facilitate such transfers or exchanges, be they workshops, lectures, courses, techniques or technical modes, curricula, information packages, or informal discussions. Furthermore, this process category is neutral with regard to the ultimate application of such knowledge to no improvement of educational practice (knowledge use). The Knowledge Flow process is represented by a seven-level system varying from "stagnant" to "full knowledge exchange."

- Stagnant - knowledge and resources that are present in the environment, but not utilized.
- Knowledge Placement (Out-In) - knowledge that is put into the inter-organizational interaction from some external source, but which is not employed due to its lack of relevance or appropriateness to the interactions at this level.
- Knowledge Infusion (Top-Down) - ideas and knowledge resources that are pushed into the system by superior to subordinate or hi-status to low-status participants.
- Knowledge Transfer (One-Way) - refers to the knowledge resources that are given by one participant to another in the form of a package, workshop, etc., but emphasizes a giver-receiver relationship.
- Knowledge Transfer (Two-Way) - participants provide different pieces of information usually concerning different issues or agenda, but which help promote understanding of the organizations involved.

. Knowledge Exchange (Unequal) - the sharing of knowledge concerning a common problem. There is genuine learning going on, and participants develop a sense of each other's perspectives.

. Knowledge Exchange (Real Time) - the type of knowledge flow that results from participants approaching a problem from a common perspective and with high degree of empathy and trust around the needs of the actors in the system.

d.) Inter-Organizational Behavior Types

The three inter-organizational processes--interaction, initiation, and knowledge flow--each with their seven stages or levels, can be grouped horizontally into four categories representing several types of inter-organizational behavior. These four behavior types correspond to the four styles of effective leadership discussed by Hersey and Blancherd (1977). Each type relates to concern with task and inter-organizational relationship and reflects the presence of certain levels of power, certainty, understanding, need, trust, benefit and maturity employed by participants in the interaction (see Process Dimensions below). It must be stressed that each type of inter-organizational behavior may be effective, depending on the purpose, process dimension levels (see below), and the leadership style employed in the interaction. Returning to our chemical metaphor, the four inter-organizational behavior types might also be seen as representing states of compound formation ranging from inert (non interactive) - incapable of reaction, to spontaneous (sharing) - representing complex, organic compounds capable of generating further reactions. The four types of inter-organizational behavior are:

. Non-interactive - where various organizations do not interact. They behave like a series of inert elements in isolated chambers. There is no mixing nor is there any likelihood of knowledge resources being shared, except by coincidence. As we shall discuss below, there may be numerous reasons for such a situation.

- Telling - in this type of interaction between organizations, there is a tendency for power to be used to precipitate change or create new behaviors. The elements may be forced together but the chance of creating more than a mixture of the ingredients is not high. Though some knowledge interaction may take place, it may be inappropriate to the situation and there is a high possibility of generating unanticipated events and undesired outcomes. However the behavior may be effective in situations where the "followers" are apathetic and/or resistant.

- Selling - in this type of inter-organizational interaction, some authority/power is exerted (i.e., the hard sell), but it is generally predicated on some level of understanding of needs, benefits, and maturity (see below). In this situation, organizational elements may form into temporary bonds for the satisfaction of varying needs. But these compounds may tend to disolve or deteriorate as the needs are met, and there is little likelihood of a new and permanent arrangement resulting from the interaction. It is likely that there will be knowledge transfer, but this will generally be for the satisfaction of differing needs or may revolve around differing issues.

- Sharing - this type of inter-organizational behavior represents the most complex level of interaction between two or more organizations in an environment--cooperation or collaboration. Inherent in this type of interaction are the presence of high degrees of trust, understanding, perceived needs, satisfaction and mutual benefit. It also presumes a high degree of maturity on the part of the organizational participants concerning the interaction. At this level, it is possible to expect the generation of new compounds with properties of their own, as well as the creation of new structures to contain them. Knowledge resources utilized at this level may well contain the full range of types from situation based to research based (openly identified as such), and will be used to reinforce continued cooperation and collaboration between the participating units.

e.) Process Dimensions

The interaction between inter-organizational processes is viewed as operating in a context of attitudes and values which are herein referred to as process dimensions. Process dimensions represent an array of critical variables which underlie the processes. They are background

variables which represent participant perceptions and attitudes concerning the Pairing, both individual (perceptions and attitudes) and institutional (such as the socially constructed norms, meanings, and values of a group or organization). The process dimension variables are:

- Power Equity - the perceptions or attitudes that the ability to influence or shape the inter-organizational processes is similar for all participants. By stating the dimension as "equity", it reflects the degree to which power issues remain important (low) or have been resolved (high) in the Pairings.

- Needs - the awareness of the desire to receive or provide support and resources in response to a particular problem or set of issues before the Pairing. It may be stated, implied, or inferred.

- Understanding - the level of knowledge and appreciation participants have about each other's organizational purpose, situation, and circumstances.

- Trust/Respect - the degree of confidence and belief that one participant can place in the statements, actions, and intentions of another.

- Mutual Benefit - the perception that the interaction process will be fulfulling and bring reciprocal satisfaction/exchange to all participants and will reinforce further investments of time, resources, and energy.

- Maturity - the level of comfort and self-confidence participants feel about the efficacy of the inter-organizational process, the outcomes, and their role in contributing to both.

These dimensions are interrelated and mutually reinforcing. They are indicators of environmental conditions as well as participant expectations concerning the inter-organizational arrangements. Evidence from the case studies indicates that they tend to be positively associated to the levels of inter-organizational processes over time.

The inter-organizational process should not be viewed as being locked together of fixed into a grid, but should be seen as sliding and aligning with each other in a constantly shifting, dynamic state. It

would be helpful to think of the processes as a tripod or three-legged stool, supporting a certain level of inter-organizational behavior. The three legs tend to be strongest and reinforce each other at similar levels or stages. Therefore, as the cases indicate, the inter-organizational process levels will tend to be similar at a certain point in the Pairing's life, and inter-organizational behaviors will reflect that level of interaction.

In summary, then, the core of our systems model represents the interaction of inter-organizational processes as they reflect the development of inter-organizational behavior along a scale of perceptions, attitudes, and values called process dimensions. These elements (processes, behaviors, and dimensions) are interrelated and mutually reinforcing. They will tend to advance through the various levels or become stabilized at a particular level depending on the presence of structural and environmental factors, and the nature of the participating system (organizational sub-systems).

4. Hierarchy of Needs/Resources

Between the Inter-organizational Processes and Knowledge Use/Outcomes, we have placed another filter or lens which we have labeled the Hierarchy of Needs/Resources. Like the Historic/Environmental Filters, the Hierarchy of Needs/Resources serves to reshape, bias, or block the relationship between processes and outcomes, particularly with regard to types of knowledge flow and knowledge use. An examination of the cases indicates the presence of a sequence of resources involved in the Pairings as they developed over time. This progression ranges from material resources such as papers and classroom supplies, to conceptual resources, such as

theories on reading and learning, and includes goals/ideas, equipment and facilities, technologies, and curricula. It is a series or organizational priorities and values operating in the public schools and universities/colleges, which appears to be shaped by the cultural and organizational milieu of the individuals in each of these institutions.

In schools, the hierarchy of needs provides a system of motives and concerns which either support or undermine individual participation in inter-organizational activities and the process of knowledge flow. Schools' needs hierarchies appear to be context bound, and require significant situation knowledge before they can be effectively addressed. Universities and colleges have hierarchies of needs too, but these tend to differ from those of the public schools. An important element of the Pairings is the fact that the universities/colleges have a hierarchy of resources which tend to shape their approach to problem identification and inter-organizational problem solving.

The difference between the hierarchy of needs of schools and the hierarchy of resources (and needs) of the university/college in each Pairing appears to be important to determining the level of success and knowledge flow involved in the Pairing's activities. In this sense, the needs/resources hierarchy serves several functions: 1) it focuses inter-organizational interactions on the satisfaction of most basic needs for participants and their organization; 2) it limits the (psychological) risk for participants in the Pairings by reinforcing a series of interchanges that will tend to be non-controversial and impersonal; and 3) it focuses or limits the types of resources employed in the interactions to those that would be most acceptable to both partners in the Pairing.

What the Hierarchy of Needs/Resources seems to indicate is that initial interactions between two organizations (sub-systems), will tend to involve mundane, impersonal issues, and run the risk of employing inappropriate or mismatched resources, particularly if the interaction is not spontaneous or voluntary. The most effective transactions will generally involve material resources, and knowledge flow will be limited. As participants gain an understanding of each other's organizations, needs and resources, interactions will tend to be more effective and knowledge flow will tend to increase. Resources and issues will become more varied and relevant to the participants and their organization. Given the differences in various organizational needs/resource systems, it may be unrealistic to anticipate high levels of knowledge flow and use in mandated inter-organizational arrangements involving schools and universities/colleges. This may be particularly true in complex urban settings where public institutions are facing declining resources and enrollments. It would appear that schools, like people, must satisfy basic needs before they can be expected to accept the risks of intervention and change, or before they can engage in high levels of knowledge exchange and use.

5. Knowledge Use/Outcomes

The result of the complex interaction of structures, filters, and processes, is the impact that the School-University/College Pairings have on teaching and learning in the participating schools. An essential element of this is the degree to which knowledge involved in the Pairings was used to improve educational instruction in public schools, and enhance or increase future Pairing activities. In our proposal, we mentioned five

criteria which we could employ for evaluating the outcomes and effects of the Pairings, they are as follows:

- Institutionalization and Internalization - and what is the chance of this project or program becoming institutionalized within the client system, and internalized in terms of moving through the system from areas of origin to other areas of practice within the school system?

- Increase Access - how does the program improve minority participation in education?

- New Programs - does the pairing promote the creation of additional progress and practice?

- Improves Current Programs - to what level does the inter-organizational arrangement serve to better, in terms of fine tuning and upgrading, programs already in place in the sites?

- Extends Ongoing Programs - to what extend does the project, program, or collaborative arrangement promote the adoption of programs throughout the school, district, or system?

To these we have added three more:

- Cost Effectiveness - in what way do the outcomes/effects relate to the costs involved? Were they positive (costs $>$ effects) or negative (costs $<$ effects) and what was the ratio (E/C)? Which projects tended to be cost effective ($C < E$) and what were their characteristics?

- Improved Achievement - to what extent, if any, did the activities and effects of the Pairings improve achievement levels for students in the participating schools?

- Leveragability - to what extent were the inter-organizational arrangement outcomes used to increase commitment of resources and people to the Pairing within schools, school districts, organizational pairing partners, or the system in general?

These eight criteria form the foundation upon which we place a three-dimensional representation of knowledge types (research based, craft based, and situation based). It is our assertion that the three types of utilization knowledge (situation, craft, and research) are interrelated and that they, in turn, are associated with levels of Inter-organizational Processes and the Hierarchy of Needs/Resources of the participation organizations.

6. Feedback and the Function of Time: Important Dimensions

In presenting the simplified form of the model (see p. 36), we stated that it represented a system which was interactive, dynamic, and time dependent. In fact, we have alluded to the function of time as a critical dimension of the model throughout this discussion. Its importance cannot be overstated. Time serves several functions: it is a structure which delineates a period of activity such as the annual funding cycle of Chapter 636 or the academic year; and it is an important parameter of the research, bounding our investigation to a particular state in the lives of the Boston School-University/College Pairings.

In the original TDR proposal, we postulated that the "career" or lifecycle of each Pairing could be recapitulated as a struggle for power among the Pairing partners. That view of power as struggle and conflict, and its importance now appears to have been narrow and untimely. While there is some evidence of power "struggles" in the cases, the period for such negotiation and conflict seems to have subsided. This leads us to conclude that: 1) power, as struggle and conflict, may be one stage in the life-cycle of inter-organizational arrangements; 2) power as a critical process dimension appears to decrease in importance over time, especially as other dimensions become more important; and 3) power as authority, influence, and decision-making ability appears to be an important issue for inter-organizational arrangements mostly in their formative stages.

Indeed, the passage of time appears to cause a shift in the nature of the Pairing activities both in terms of stages of interaction and the process dimensions. This shift might be represented as a diagonal arrow or time line passing through the processes from the lower left to upper right. It also tends to have the same effect on the outcome dimension,

passing from lower left (improve present programs/situation based), to upper (higher) right (leveraging/research based). Thus, in the early stages of inter-organizational arrangements, power issues and wariness tend to characterize the interaction, with activities focusing on efforts to improve present programs. With the passage of time, mutual benefit and cooperation would tend to characterize a more mature inter-organizational relationship, and the central activities could be expected to focus on the institutionalization of the arrangement, and thus on research based knowledge utilization.

More important than providing a structure and research parameter, time has an additional function. It provides the context for one of the model's major characteristics, its ability to represent the interactive and dynamic relationships between all of the system's components and processes. Indeed, time is the medium in which all activities, interactions, and reactions in the system take place. It literally "drives" the model, permeating every section and cell and underlies all other dimensions. It is both linear, passing through the model from left to right, and cyclic, as represented by the various input/and feedback loops.

Inputs and feedback are important ways of visualizing time. They also serve a critical function in providing the model with its interactive, constantly adjusting capacity. In an "open" system, free of environmental or structural constraints, feedback from one component to another would permit the system to adjust and facilitate the dynamic, developmental process inherent in the model. In such a system, structures and environment are interactive and flexible, influencing each other, as

well as the processes and outcomes. With time, they could be expected to adapt or change to support higher levels of inter-organizational processes and outcomes. Likewise, successful outcomes could be expected to have an equally positive effect in promoting a more supportive environment and higher stages of inter-organizational behavior.

The case studies indicate that the Boston School-University/College Pairings did not function as an open system. While it was the hope and intention of the planners and Court that the Pairings would develop and grow over time, environmental hostility, limited resources, and structural constraints prevented the type of feedback and dynamic adjustment necessary for such development. Instead, the system reached an equilibrium in the mid-range of the process stages. The importance of feedback and flexibility in the system will be discussed as part of the cross-case analysis.

7. The Function of Roles

This inter-systems model provides us with a conceptual framework with which to present a cross-case analysis of the School-University/College Pairings. However, the model is only a mechanism into which we must place the active elements of the Pairings, the various organizations or sub-systems, and the people who give those organizations life and meaning. Returning once again to our chemical analogy, we might conceive of the model as an apparatus which contains the reaction, and defines the steps and forces through which the elements will pass. Considering the participating organizations (sub-systems) themselves, as the elements which will either undergo the process or serve as catalysts,

buffers, or inhibitors to the reaction, then the individuals in each organization could be considered as the sub-particles of each element. It is at this level that the interactions/reactions take place and that mixtures or compounds begin to form. Like sub-particles of chemical elements, individuals interact, and in so doing perform a function or role in relation to the overall process.

Examining the School-University/College Pairings from this perspective, we have identified six role types operating in the model:

- Advocates - individuals who are clearly within one institution or another, but strongly committed to either a project, the concept of the Pairing, or to some aspect of knowledge transfer or utilization.

- Brokers - individuals who may or may not be directly involved in the activities of the Pairings, but who exercise some control over money, resources, or turf, and who shape part of the system through funding, resource allocation, or support for the Pairings (BEEO, CPAC's, Coordination, Presidents, School Committee).

- Gatekeepers - individuals who are in one organization or another, but most often the school system, who can exercise control over access to staff and students and can thereby regulate the impact and effects of the Pairing efforts on students and educational practice. Given an atmosphere of change and uncertainty, we believe that decentralization placed a pressure on school-site administrators and teachers to function as gatekeepers in order to protect or buffer the system from external "tampering," and interference. Thus, Gatekeepers are wary and may be viewed as system protectors or maintainers (Central Office, Teachers, Administrators).

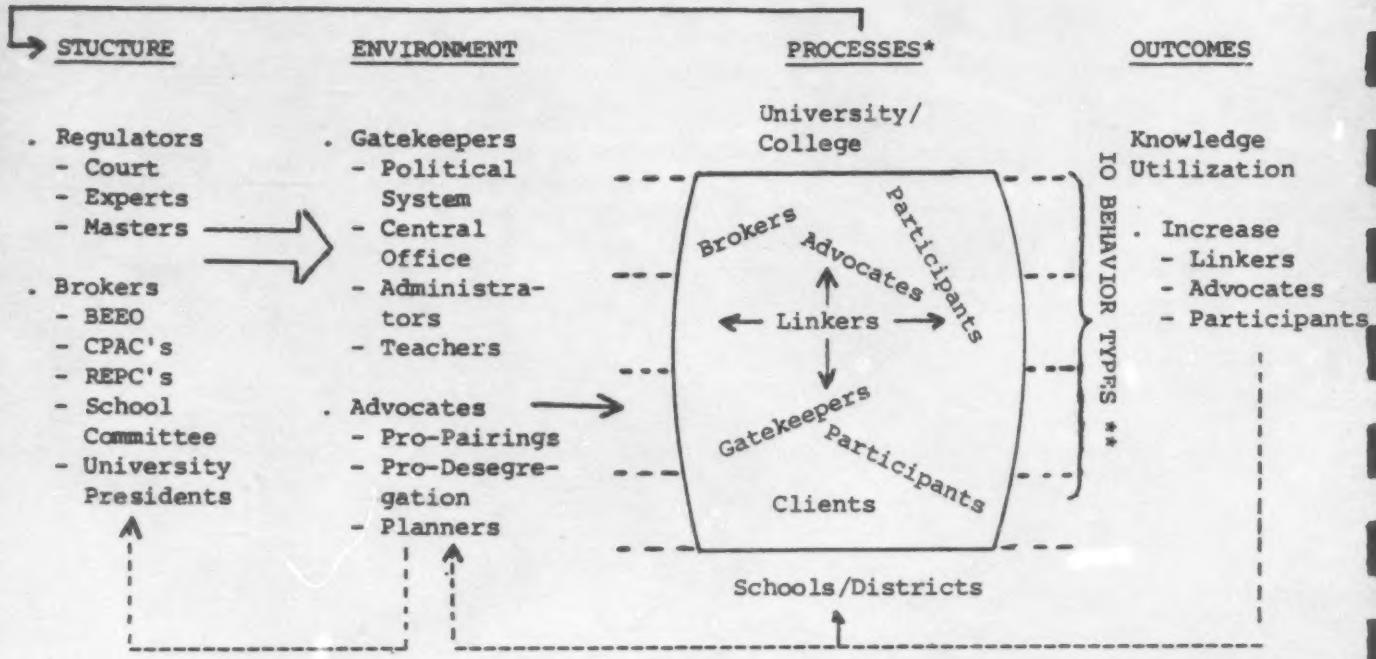
- Linkers - this role is used in two senses: 1) individual--as a person or persons who have cross or joint organizational interests/membership, and who act as a conduit carrying information, resources and/or enthusiasm for the Pairing activities between one organization and the other; 2) relational--as an association or relationship between two or more individuals in different organizations, which serves to bring about a Pairing activity, transfer resource, or knowledge flow between participating institutions (Teachers, Professors, Coordinators, Administrators).

- Participants - members of either participating organization who engage in a project or some act of knowledge transfer and utilization as service providers, or service recipients (Teachers, Professors, Students, and some Parents).

- Regulators - individuals in the organizational environment who determine the structure and manner in which the Pairings take place. They are removed from the processes, per se, but have an important role in shaping the initial inter-organizational system (Court, Experts, Masters, Planners, Steering Committee).

By placing the six role types into the systems model we examine 1) how people in these roles are influenced by the model components (i.e., structure, environment, processes, outcomes), and 2) how these model components are, in turn, influenced by the people in these roles. The resulting, interactive role patterns are represented in Figure 6 (p. 54), to be explained further and illustrated in the full cross-case analysis which follows.

FIGURE 6 The Function of Roles in the Interorganizational System



——— Direct (inputs)

------- Indirect (feedback)

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* A major assumption underlying the Pairings plan was that universities/colleges would be service providers and the schools would be client/users. This is reflected in the role differences between the two systems.

** An examination of the cases and other studies indicate that there will be a predominance of certain role types at various levels of interorganizational processes. These generally correspond to interorganizational behavior types and are represented here: Gatekeepers--wary, non-interactive; Particpants--cautious, told or sold but only slightly involved; Linkers--transferring resources and information, selling and promoting; Advocates--highly committed to Pairings, interorganizational collaboration.

III. CROSS-CASE ANALYSIS

A. Introduction

Having developed this complex, inter-systems model from our preliminary analysis of the three Boston Pairings Cases, we are prepared to scrutinize both the cases and the model more rigorously. As the model would indicate, the cases are examined from a structural/functional perspective, with particular attention to the ways in which the environment and process dimensions interact with the structural characteristics to produce certain outcomes. Furthermore, the analysis considers the effects of the various roles operating in the Pairings, and their impact on the development of the inter-organizational system and its outcomes.

Given the complexity of the model, we chose to lay it out in the preceding section in general terms for ease of first reading. In this section we reintroduce the model and its component parts, but as we proceed we add much more case material to illustrate more explicitly how the model is used to explain varying kinds and levels of knowledge flow/use for school improvement. Thus, the organization of this, the longest section of the report, parallels that of the preceding section. At the end of our treatment of each component of the model in this section, we summarize major findings about the component, its relationship to other components, and its effects on knowledge flow/use for school improvement.

B. Reexamination of Knowledge Use

Before proceeding with a detailed application of our model to the three cases, it is useful to reexamine our interpretations of key "knowledge" concepts used in this section. This is done, in part, to remind us that a primary aim of the study is to track knowledge flow/use for school improvement,

and identify factors and conditions which promote or inhibit that outcome. It is also done to sharpen our definitions of these key concepts, as finally shaped by our model and the case-study material.

In conducting the study and in developing our conceptual model we have defined knowledge as assertions about operations performed on objects and individuals in order to yield certain results, and simple facts about the context of those operations (e.g. this school has a large minority enrollment). Knowledge is information based on scientific research, on practice, or both. It can be presented as ideas, theories, explanations, or advice (Seiber, 1974); or it can be contained in more concrete form such as in programs, materials, curricula, or techniques (Yin et al., 1976). Furthermore, in this study, we examine knowledge in a two-part relationship: Knowledge Flow and Knowledge Use.

- Knowledge Flow (transfer and/or exchange) is the process by which knowledge moves from individuals and/or groups in one organization to individuals and/or groups in the same organization (intra-organizational); or to individuals and/or groups in another organization (inter-organizational), with or without application, for the improvement of educational practice.

- Knowledge Use is the application of knowledge (information/ideas) gained through the process of Knowledge Flow, to the improvement of education practice.

Two sub-categories of knowledge concern us in this study which, we emphasize, do not exhaust all the categories of information on improving educational practice that can be postulated to exist, education knowledge, and utilization knowledge. As applied to the cross-case analysis, we define these sub-categories as follows:

- Education Knowledge - information about the processes of teaching and learning, such as methods of instruction, curricula, guidance, administration, and that are usually identified as essential in the delivery of services to students.

. Utilization Knowledge (not to be confused with Knowledge Use): information about or understanding of the processes of Knowledge Flow and Knowledge Use, so that it is more effectively employed.

Obviously, the type of greater direct interest to most people is education knowledge, since manipulation of it presumably affects how much and how well students learn and develop. However, education knowledge will not be available to practitioners unless key actors in the educational scene possess and apply utilization knowledge. The present study can be briefly described as an examination of how certain utilization knowledge ideas (e.g., pairings, needs assessments, etc.) can be used to enhance the communication and use of education knowledge (e.g., techniques for teaching reading).

Education knowledge and utilization knowledge can both be further divided on the basis of the kinds of experiences from which they are derived. In general, there are two sources for knowledge which we consider in the following analysis:

. Research Based Knowledge - information on education or utilization processes obtained directly or indirectly (from books, reputable experts, etc.) from disciplined, scientific inquiry. Its assertions concerning education practice and knowledge processes are based on "objective" evidence.

. Experienced Based Knowledge - information on education or utilization processes derived primarily from practice, which we have further divided into two sub-categories:

- Craft Based Knowledge - information or assertions derived primarily from the accumulated and articulated experience of practitioners, and relies heavily on the attributed common sense and trustworthiness of the person(s) asserting it.

- Situational Knowledge - information or assertions about educational practice and the transfer of knowledge which comes from familiarity with a concrete situation and consists of statements about that situation; it is not proposed as generalizable beyond that setting (in contrast to craft knowledge, which is offered as generalizable).

Using the intersystems model, we examined a wide variety of events in the Pairings in terms of these various forms of knowledge (see Methodology and Appendix). Rapidly we found that if we restricted our investigations to tracking educational knowledge based on research, as is frequently done in studies of "knowledge transfer" in education, we would have little to observe and write about. As we widened our perspective to include more of the hypothesized kinds of knowledge, we discovered a rich field of activity that heretofore has gone largely unnoticed and that seems crucially related to the flow (exchange or non-exchange) of educational research knowledge.

Because of the difficulties encountered in tracking knowledge as it moves through a complex interaction system, two interpretations of the cases are presented. The first interpretation results from requiring clear and specific evidence of each knowledge type employed in the Pairings (experienced based and research based). The application of this criteria resulted in an analysis which reveals low levels of research based knowledge flow/use, and is consistent with our analysis of the level of inter-organizational processes reached by the Pairings at the period in their history (see Appendix B). A second interpreation is offered, however, in which the various project interactions and workshops were reexamined for evidence of possible exchanges or uses or research based knowledge which were not referred to as such in the cases, due to participants/respondents preoccupations with the situational aspects of their interactions. Influenced by the work of E. House (1980) and Carol Wiess, et al. (1977, 1980), this interpretation generated some

hypotheses concerning the way in which research based knowledge may "creep" into schools and education practice through inter-organizational arrangements, without ever being recognized or acknowledged as such. Finally, both interpretations are used as evidence to support the conceptual model presented herein.

C. Model Applied *

1. Structural Variables/Characteristics

a.) Imposed By Court

When the Court mandated collaboration between the Boston Schools and the universities and colleges, it also required that parents and community members be involved in the collaborative process. Thus created was a "three-way partnership involving groups of people who had, for the most part, never worked together before" (Broadbent, 1980). Although this study focuses mainly on relationships established between schools and universities, descriptions of the larger netwroks in which each was involved would not be complete without attention to the roles that parents and community played in the pairing. Thus, a distinction is made throughout this report between inter-organizational arrangements involving mainly the schools and colleges, and the larger networks in which these two participated in each district with parents and community representatives.

Each institution and its paired district varied from the others in basic characteristics, but the formal procedures and governing bodies that controlled the operation of the pairings were somewhat similar. Essentially, an idea for a project could originate with any person

* In reviewing this section the reader will be assisted by referring to Figure 5 (p. 36), in which the model components and their interactions are graphically presented.

or group in the pairing, but typically was taken to the office of the university coordinator at an early stage of development; in those districts with a school person designated as "636 facilitator" or "pairing coordinator", the idea would also be tested with that person, regardless of the section of the pairing in which it arose.

As a further complication, a number of formal relationships extended beyond the university-school-community network. As shown in Figure 6 (p. 54), each pairing was also affiliated with one or more cultural and/or business organizations. In general, these relationships are not discussed in the case studies. Their omission is the result of an early staff decision made to keep an already complex study within manageable bounds.

Additionally, the planning, approval, and operation of a project within a pairing required the cooperation of a complex array of agencies and officials outside of the pairing (see Figure 7, p. 62). At minimum, the following groups had to give explicit or tacit approval to projects: Bureau of Equal Educational Opportunity (BEEO), University Presidents' Steering Committee, the university coordinators, community monitoring groups, the School Committee and central administration of the Boston Schools, and (at least implicitly) the Court and the Masters advising Judge Garrity. A description follows of the role of each and its influence on the operations of the pairings.

b.) Environmental Structures

. Bureau of Equal Educational Opportunity (BEEO)

BEEO is the main funding source for pairing activities, through Chapter 636 of the 1974 Racial Imbalance Act. BEEO remained remote

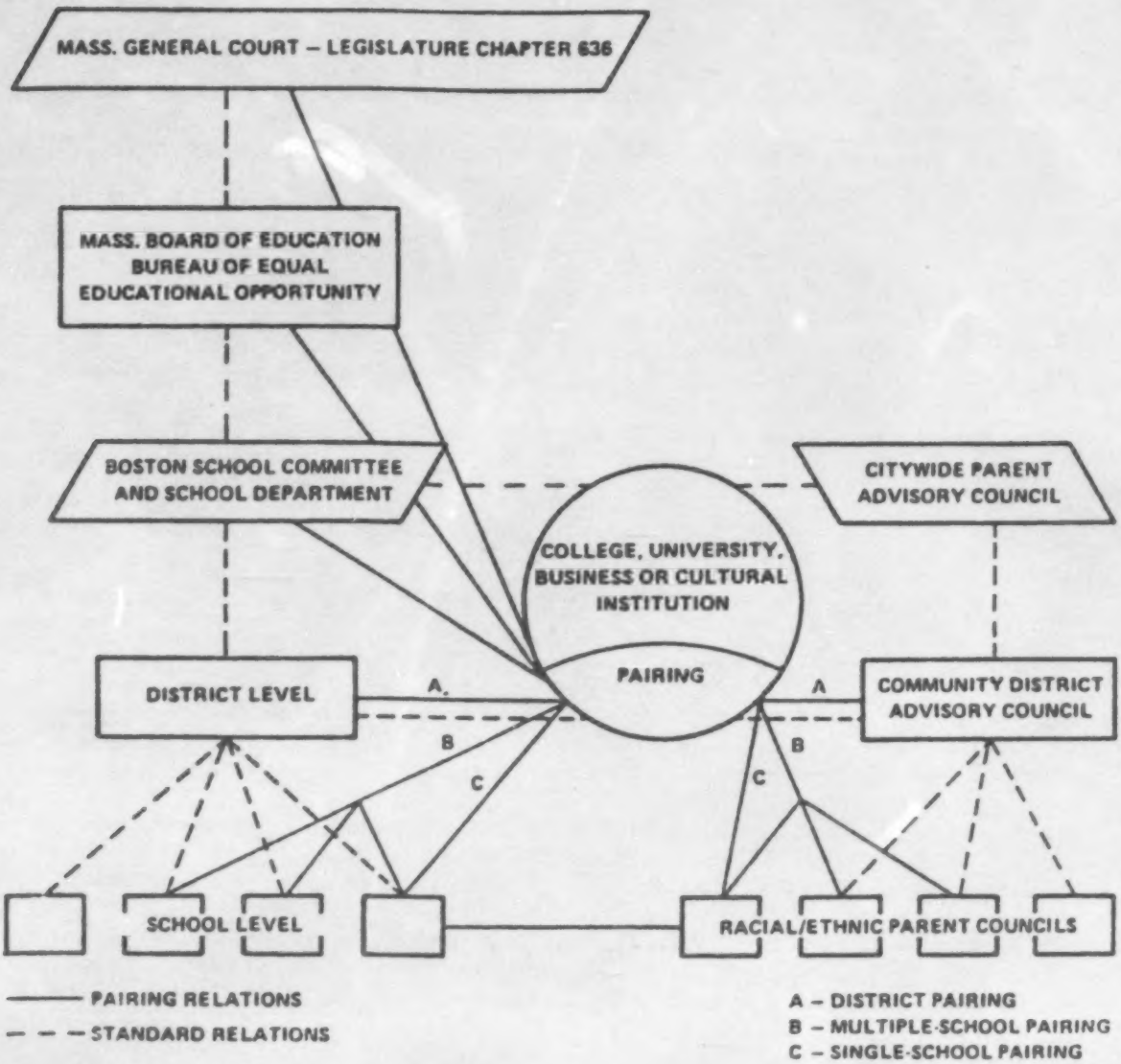
from collaborative activities and attempted to exert little control over them. Nonetheless, as the major supplier of financial support its "presence" could never be totally disregarded.

One State Education Department official speculated that three circumstances shaped BEEO's stance of noninvolvement:

1. with minimal staff to administer the 636 Program, of which the school-university pairings were a small part, little time could be devoted to pairing issues;
2. the universities and the schools defined BEEO staff as bureaucrats administering funds, not at potential providers of technical assistance or resource coordinators; therefore, it was appropriate that BEEO not be involved in policy, planning, or evaluation;
3. the Commissioner of Education believed that the state should adopt a "hands-off" attitude and let the universities and the schools work things out; Department officials worked within the boundaries of the Commissioner's philosophy, aptly described by a source close to the issue: "Once in a while we'll pull up the carrot and see if it's growing, and then we'll stuff it back in the ground. But we won't direct which way it's going to grow."

This last point was confirmed by other sources. According to one Boston Public School administrator, some BEEO staff tried to provide leadership, but were variously rebuffed. One state employee suggested that the state coordinate a series of seminars for the university, school, and community people during which common problems and issues could be discussed and shared. A group of university coordinators resisted this proposal, and the seminars never materialized. A state suggestion to use part of available 636 evaluation funds for a coordinated planning effort received support from some university people interested in assisting the schools to improve their planning capabilities. The Boston School Department, however, rejected this idea.

FIGURE 7



(Broadbent, 1980)

Pairing Relations Among Schools, Institutions and Parents/Community

At the same time, BEEO was criticized by some as being unwilling to enforce state quidelines (for example, minimum required percentages of minority students served in schools receiving 636 monies) and as failing to challenge the Boston School Department's continual delays and red tape. A number of university people felt the state "should have cracked its whip on Boston" with regard to procedural and administrative barriers that produced great frustration for those involved in program implementation, particularly the university coordinators. Expectations of the role BEEO would play varied and each partner wanted it to act in a manner that would serve its own purposes. As one coordinator put it:

> BEEO has stood on the sidelines in the role of the one-eyed umpire. Sometimes he sees something and calls an out, but most of the time, he can't see. It isn't for lack of courage or commitment, it's for lack of time.

But the significance of the functions BEEO did discharge should not be understated. The agency was sincerely committed to getting funds to the schools, and did so although often bogged down by procedural requirements. The proposal approval process alone (see Figure 1, p. 8) demonstrates the myriad of check-offs needed for accountability to all parties involved. Allocation of funds, management of proposal reviews, organization of payment procedures were all parts of a process the state had to improvise as it went along, and were major sources of aggravation for those at the program level during the first couple of years.

. The University Presidents Steering Committee

The presidents established the Steering Committee in order to facilitate cooperation among their institutions, and to oversee the

initial stages of collaboration with the schools. The Committee was intended to be a unifying body, providing liaison with parallel groups in the desegregation effort, and disseminating information about pairing activities to all of the participating institutions. Some members also hoped to explore alternative structures for collaborative activities and sources of funds beyond Chapter 636.

Soon after its inception, the Steering Committee perceived that it needed administrative assistance in order to achieve continuous presence and requested the Lincoln Filene Center for Public Affairs at Tufts University to act in this capacity. The center accepted and rapidly found itself, like BEEO, in an exposed and potentially damaging position, having to represent a wide range of individual university and presidential interests. Like BEEO, it was forced into the relatively safe role of neutrality. As described by one coordinator:

> ...in many ways it's a terrible chain of powerlessness. The coordinators are powerless, and I think Lincoln Filene feels quite powerless and frustrated in terms of whatever their hopes and expectations were, that they could have done.

A Boston administrator said:

> ...The Lincoln Filene Center didn't see itself as working on behalf of the coordinators. It saw itself as working on behalf of the presidents. And the presidents were as much concerned with image as anything else. The presidents, like all administrators, are political animals, and they don't want to do anything that would attract public attention to any problems that they might have.

This outcome produced frustration among the university coordinators who had hoped that the Center would solve their problems with the Boston Public Schools. They had also hoped the President's Steering Committee

would support and assist their efforts to become facilitators of collaborative planning rather than simply vendors of services. The coordinators invited the Center's liaison officer to the first meeting of their group. Because of his determined neutrality, he was not included in further meetings, and relations between the coordinator group and the Center disintegrated.

Several coordinators felt the presidents rendered themselves powerless by not mobilizing their "clout" as a group, and speculated that the individual chief executives were wary of cooperating with one another. Usually the presidents did operate separately, although at one point three of them met with the School Committee to urge a policy of compensating teachers for participation in out-of-school workshops, and reimbursing tuition costs for inservice activities, both out of Chapter 636 funds. Following the meeting with the presidents, the Committee agreed to more flexibility in the use of 636 funds for such purposes. This, however, was atypical behavior by the presidents. Statements from two university employees confirm this:

> It's very clear that the presidents entered into the arrangement on the condition that each would remain independent, they would not form a consortium or a group, and that no one would be able to speak for other members. Now this was probably necessary for each individual institution, but it created a very loose federation or collection of institutions, and there was no way of the univeristies as such playing any leadership role, particularly in light of the fact that the School Department and the School Committee were determined that the universities would be pushed into the box of being vendor of services.
>
> ...The purpose of the presidents seemed to be to enable each president to be sure that the other presidents didn't commit him to something he couldn't live with in his own institution.

. The Boston School Committee

The School Committee had to approve proposals for projects prior to their submission to BEEO for funding (see Figure 8, p. 67). Although this seems to be a limited role, in the early stages of Phase II the School Committee used it to control the nature of the projects and the involvement that universitites were to have. The first years of the pairings were dominated by a School Committee that wanted to support only activities in which the universitites provided direct services to students. The Committee seemed to distrust the pairing process and resented the Court Order in general. However, as one university source pointed out, the Committee's behavior was not especially directed at the pairings:

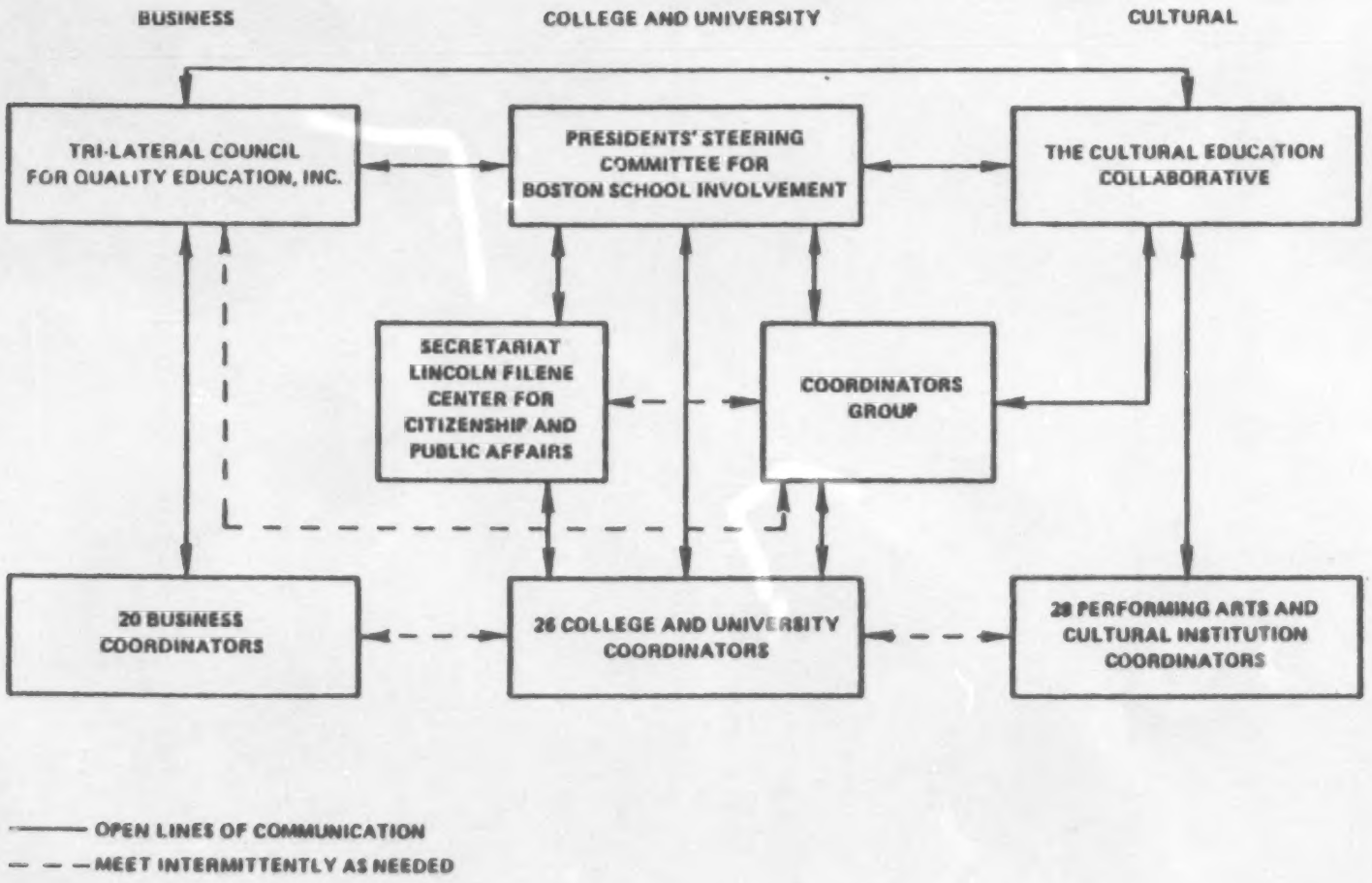
> They (School Committee) weren't acting more atrociously to the colleges than they were to anyone else; they were just acting like the Boston School Committee.

A central school administrator describes the first couple of years as dominated by the power issue:

> They (the School Committee) didn't have much power to do many things. The Court had taken a lot of it away. This was still an area where they could expect some power. The pairings were Court creations. I assume some of that aspect perhaps tarnished the pairings in their minds. I mean, I'm only guessing. I think there was suspicion that the university was going to rip us off, take advantage of the plight of the system. Frankly, there was no proven track record to show the universities could make a contribution to the schools.

Nonetheless, the university coordinator or his/her staff members were the primary persons who worked with the proposer(s) to move the idea towards proposal form; the coordinator's office frequently recruited resource persons

FIGURE 8


BUSINESS
COLLEGE AND UNIVERSITY
CULTURAL
TRI-LATERAL COUNCIL FOR QUALITY EDUCATION, INC.
PRESIDENTS' STEERING COMMITTEE FOR BOSTON SCHOOL INVOLVEMENT
THE CULTURAL EDUCATION COLLABORATIVE
SECRETARIAT LINCOLN FILENE CENTER FOR CITIZENSHIP AND PUBLIC AFFAIRS
COORDINATORS GROUP
20 BUSINESS COORDINATORS
26 COLLEGE AND UNIVERSITY COORDINATORS
28 PERFORMING ARTS AND CULTURAL INSTITUTION COORDINATORS
OPEN LINES OF COMMUNICATION
MEET INTERMITTENTLY AS NEEDED

Collaborative Institutions' Resource Communication Network

(Broadbent, 1980)

from the university, district, and elsewhere to participate in the process or to serve as staff of the project, if funded.

When and if reduced to written form, the proposal ran a gauntlet of review panels within the pairing, including (in most of the networks) an advisory committee of university people, district and building administrative staff, and the community groups (CDAC's and REPC's; see Figure 9, p. 74). The goal of these reviews was to establish, during March and April of each year, a "package" of projects for the pairing during the coming academic year, which could be sent to the School Department, School Committee, and BEEO for further review, possible amendments, and eventual approval (see Figure 9, p. 74). This "package" also had to bear a realistic relation to the amount of money that might be expected to flow to the pairing during the coming year, from Chapter 636 and other sources.

The university coordinator and his/her staff worked on a number of possible new and continuation projects simultaneously. He/she tried to keep abreast of prospects for funding for the coming year. University coordinators and their opposites in the district (where appointed) informally monitored and tried to assist on-going projects, and facilitated the activities of external evaluators who visited pairings' projects each year.

Unlike some "single school" pairings established by the Court Order, Harris, Dunfey, and Massachusetts College were each linked to approximately twenty schools in the districts to which they were assigned. The specific and different ways in which the three dealt with their "pools" of potential collaborators is an important theme dealt with in the case studies.

The three priorities for pairing projects that the first School Committee established were: providing college scholarships with Chapter 636 funds, allowing high school students to attend college classes, and assigning student teachers from the universities. Obviously, projects embodying only these priorities would have fallen short of achieving the main purpose of the pairings--exchange of resources and collaboration, in the name of excellence. There are underlying questions here that need to be stated more directly. One is whether Judge Garrity or the Masters themselves originally saw beyond "vendor" possibilities. A second is whether the School Committee was reacting with special fervor against certain "personalities" publicly identified as promoting the pairing concept. A third proposed that the Committee's responses were based mainly on its overall resentment of the Court Order.

Whatever its reasons, the Committee created a climate during the first two years that did little to enhance collaborative efforts. University people were aware that school people were generally suspicious of them, producing undertones of mistrust. The School Committee assumed that the universities were going to "rip off" the schools, as one person described it. Such an attitude affected all parties' activities regarding the collaborative effort, and especially the universities' efforts to prove their worth as more than purveyors of scholarships, tutors, and undergraduate classroom aides.

> It took a couple of years until a new Committee came in until we overcame that, and so far the last two years we've had every proposal approved--we haven't even had to go to meetings anymore.

Thus the School Committee presented a large structural barrier during the first two years of the pairing operation. It is agreed, however, that it no longer displays the skepticism which characterized much of its relations with universities in 1975-76 and 1976-77 (Worth, McMillan, Hunt, 1978). Time, new Committee members, and generally respectable track records have built trust to the extent that the nature of project proposals is no longer an issue.

. University Coordinators

Of all those involved in the pairings, the university coordinators have been involved in the largest number of aspects and have had exerted significant influence in shaping collaboration between the participants insofar as it has been achieved at all. Coordinators were responsible for the overall management of pairing activities. This began with proposal development and continues through the implementation of both school and university activities, regardless of whether they took place in the university or in the school (Broadbent, 1980).

No single job description existed for the coordinators, so each coordinator brought his/her own personality, interests, and experience together with the characteristics of his/her employing university, and those of its affiliated schools or school district to bear in for each pairing, as the three case studies illustrate. Because of the intricacy of their jobs most coordinators were full-time or nearly full-time in the pairing effort. As a group, about one-third of the coordinators have been with their pairing from its beginning. This longevity in a taxing and non-permanent position may be related to the fact that most are "people with experience and commitment to the urban setting", as one coordinator described them, and not easily disillusioned with the problems inherent in urban education.

The university coordinators have supported each other by meeting regularly to discuss common concerns and problems. During the past five years, they made special efforts to affect pairing activities by establishing task forces or committees on topics they deemed of critical importance, like evaluation of pairing activities, parent involvement, pairing guidelines, and the pursuit of non-636 funding. The general feeling of the coordinators is that most of their suggestions fell on deaf ears, due, in part, to lack of responses to them from the university/college presidents, who seemed to want to remain aloof from policy-making, and politics, vis à vis the Pairings.

While their role in promoting the Pairings is important, their impact on the participant systems, in general was minimal. The resulting feelings of severely limited control or influence have been discouraging to many coordinators. As one said:

> ...The coordinators in the university institutions were absolutely without power. We had no voice in the allocation of money, we had no voice in the guidelines which determined our functioning, we had no real voice in the evaluation procedures by which we would be judged, even though there were some minimal conversations.
>
> I said we were without power, which is without voice in these discussions that substantially affected our operation. We were without opportunity--the opportunity to engage in systematic planning and providing technical assistance. We were the academics and the academics were totally outnumbered by a combination of school people and parents, so that we were just in the most vulnerable position that you can imagine.
>
> The coordinators initially expected that they were to be partners and equals with shcool leaders, but were quickly perceived themselves as pushed into the role of "vendor" or "purveyor" of requested services.

> A pairing is supposed to mean equals, but you do not have equals. We, as vendors of services, are treated like any other vendor of services in many regards. The School Department turned down or turned around, and we're treated as a vendor, any other vendor. A partnership, a real partnership, might have indeed done it somewhat differently. ...There was never the idea of partnership in mind in the School Department.

Despite their frustrations, the coordinators as a group have made several attempts to advance their ideas through position papers focused on possible future directions for the pairings. The first of these, presented as a report to the presidents in 1977, was not allowed to "surface" because of the presidents' hesitation at being publicly critical (constructively or not) of the pairing process. The second, a recently published booklet entitled "School/Institution Collaboration", includes five pages of "reflection on action" emphasizing many of the issues implicit in the 1977 report: design of long range plans, ways to strengthen links and communications between school and university personnel, establishment of mutual trust, and specification of program goals. Both these reports were formal attempts by the coordinators to share their knowledge and experience and to gain the attention of professionals for ideas they have earlier voiced but had no power to force as issues.

This is not to say that individual coordinators had no power at all to affect change. Personal power played an important role in a number of events that occurred in the pairings over the years. While these occasional results should not be played down, the prevailing perception among the coordinators is that they have not been treated as equal, respected, decision-sharing peers of school personnel. As one Boston administrator states, the university coordinators' frustrations stemmed from the fact that

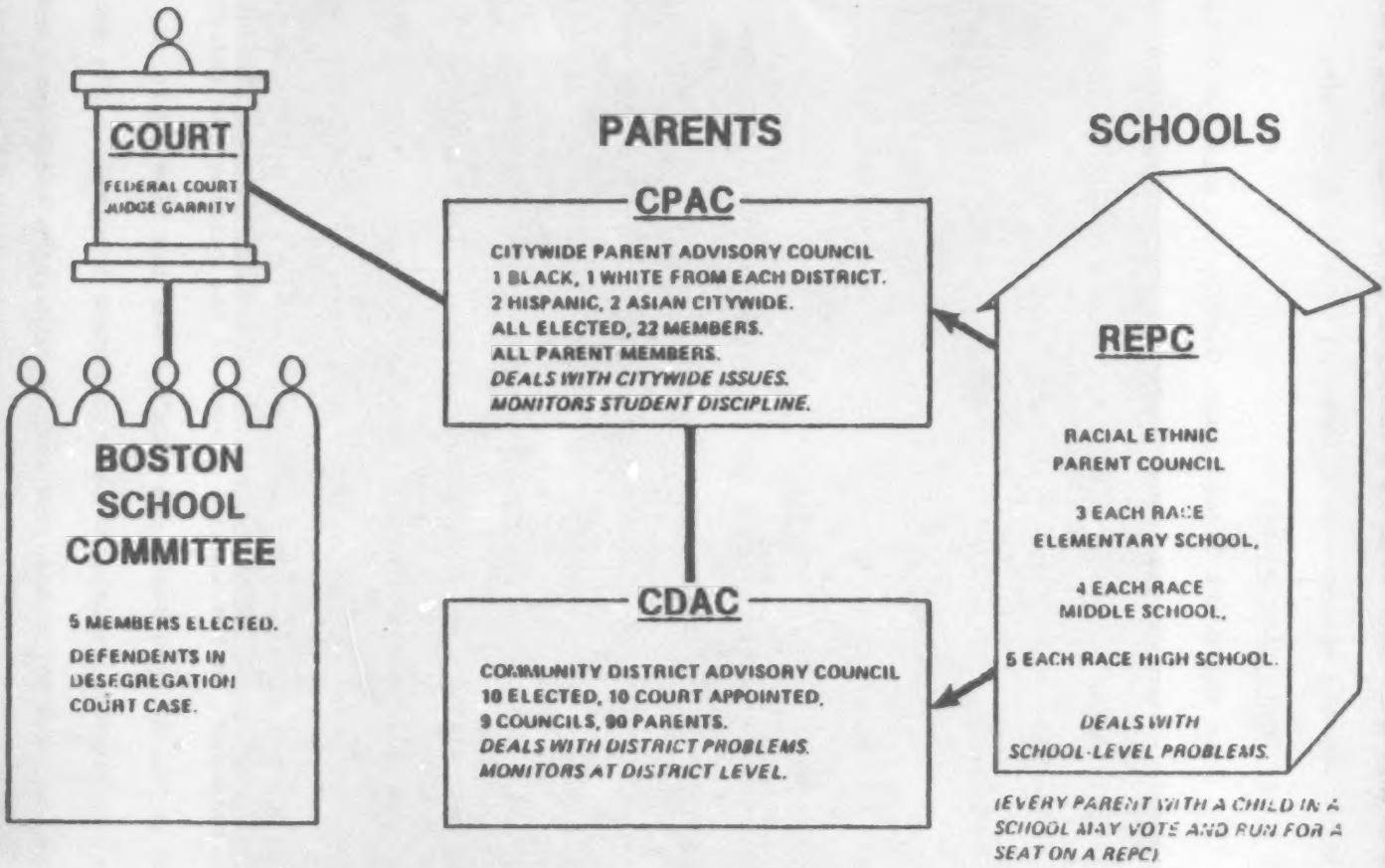
they felt they should be "helping the system to change and improve for the better, and they felt they were in a position to do that. And they didn't understand why the system wasn't inviting them in to do that."

. Community Monitoring Bodies

In the Court Order, Judge Garrity established three interlocking levels of parent and community groups, to participate in the desegregation process. The parents of children in each school selected a Racial Ethnic Parent Council (REPC), with a guaranteed number of seats for each race included in the student body. The REPC, in turn, sent representatives to the Community District Advisory Council, (CDAC) of the district to which the school belonged, and which dealt with matters at that level. Each CDAC sent one black and one white parent to the Citywide Parent Advisory Council (CPAC), where they were joined by two Hispanic and two Asian parents, elected at large. The CPAC was construed as the parents' official monitoring body for desegregation (see Figure 9, p. 74).

The REPC's and CDAC's, especially the latter, participated in the pairing process from the beginning, but mainly by reviewing and acting upon proposals submitted by the other partners. The Court had originally intended that parents be involved in other ways as well, but these were not specified and did not occur spontaneously. The attitude of university personnel in the initial stages of the pairing was characterized by one source as "We do, you read, you sign". Over the five years reviewed here, increasing numbers of parents became involved in the schools themselves via paid and volunteer jobs such as classroom aides and parent coordinators. Participation in the actual development of programs has remained minimal and indirect, except in a few instances, and despite considerable effort in some cases.

FIGURE 9



(Broadbent, 1980)

Boston Parent and Community Involvement in Desegregation

One central school administrator feels that the involvement of parents has increased and that many are more aware of the different ways in which they can participate. The Court's vagueness about these possible roles has retarded parents' entry into them. Further, parent groups are not "organizations" in the sense that schools and universities are. Their participation has been more reactive than proactive, and limited as the result of problems generic to most parent groups: frequent turnover of members, restricted time available for school affairs, and limited perspectives on educational issues.

The foregoing description provides some idea of the nature and complexity of the Inter-organizational System which resulted from the Court's Phase II desegregation order. Indeed, in its attempt to pair the public schools with the city's numerous universities and colleges, the Court, its experts and masters created a broad (comprehensive) and elaborate (complex) series of structures which were imposed on the Boston School System's newly formed community districts. In spite of the size and complexity of the inter-organizational arrangements that resulted from the intervention, or perhaps because of them, the Court's directions and instructions on how the system should be implemented were as vague as they were broad. Indeed, the orders were "long on legal remedies, demograhics, geographic boundaries, facilities, and organizational structures. But... short on providing for practical remedies.

Due to the background and history of the Court's action, the planners and implementors were, by and large, separated. Thus, the complex structures of the Pairings were often viewed as unalterable and untouchable by those within both the universities (colleges) and the public schools. In the long run, this perception provided a considerable constraint to the functioning of the Pairing, as discussed in this report.

Without sufficient involvement in, or orientation to, the planning process in general, parents lacked the preparation and knowledge to function as envisioned in the Pairing scheme. Their involvement was confined to being generally formal and ceremonial. Little success was attained in trying to coordinate parental involvement, and the cases indicate that parental participation on community boards centered primarily on the use and control of 636 funds at the community district level.

c.) Participant Organizations: Sub-system Characteristics

In preparing the cases and in their subsequent analysis, several features of the inter-organizational system are essential to understanding the variety of activities and outcomes of the Boston Pairing. First, it is important to understand that the complex structures developed to promote these inter-organizational arrangements paired organizations that were themselves varied and complex. Each university/college is organized into various schools, divisions or departments, which are further divided into program, institutes or offices. The Boston School System, as we have stated, is divided into a central administration, community districts, elementary, intermediate, and secondary divisions, and individual school sites, to name a few. The schools, in turn, are divided into grades, programs, departments, and individual classrooms.

Not only are the participatory organizations complex, but they vary considerably in terms of their internal organization, structure, channels of communication and authority, styles of leadership, decision-making, and sense of values, priorities and mission. This diversity is also apparent intra-organizationally. Within each community district or university/college, styles of leadership, decision-making, program interests,

and sense of purpose vary from site to site, or department to department. The impact of such diversity is readily apparent in the cases, and requires some explanation here.

Universities/Colleges as Organizations

Through the efforts of the Carnegie Foundation (1973), and the writings of such authors as Warren Bennis (1959, 1967), Cohen and March (1974), J. Victor Baldridge (1971), Riesman and Stadtman (1973) and others, the diversity, complexity and problems of organizations of higher education have received careful attention and analysis. Many of the issues and concerns raised by these researchers apply to universities and colleges involved in the Boston Pairings Cases. While, at first glance, it may be easy to classify universities and colleges together, such a grouping is misleading and an over-simplification. The three universities/colleges involved in this study were alike only insofar as they were institutions of higher education, share in some generalized sense of purpose, and have somewhat similar calendars. Otherwise, they span the spectrum of post-secondary institutions and differ in many ways which profoundly affect their interactions with schools.

Harris University is a large, private institution, with a national clientele, strong tradition of research, centralized authority, strong leadership, and an ostensible lack of significant, historic involvement or concern with the Boston Public Schools. On the other hand, Massachusetts State is a small, public teacher training college, with a very local clientele, bureaucratic leadership, decentralized authority, little tradition of research, and a long history of involvement with the Boston schools. Somewhere in between these two lies Dunfey, a very large and diverse private university, highly decentralized, with public-minded leadership, a minor but growing interest in research, and a strong commitment to community service.

In each of these institutions, the level of commitment to the Pairing Program, in terms of time, money, the focus of the effort, and status accorded the office of the Coordinator within the organization varied. At Harris, the program was conducted almost entirely through the School of Education where the dean, a court-appointed expert, was a highly committed advocate and planner of the Pairings. While the Harris-District A Pairing received high priority within that school, there is little evidence of concern or involvement with the effort at a higher level. At Dunfey, the interest and concern of the university president assured the Pairing recognition and access to university-wide resources. The office of the Coordinator was given the funds and personnel to pursue university-school district programs on a broad front. Of the three cases studied, Dunfey's investments in the Pairing concept were the highest. Massachusetts State, having a long tradition of involvement with the training of Boston's teachers, brought its resources to bear in a time-honored and apparently comfortable manner. There is little evidence that the Pairings occasioned the need to create extensive, extraordinary structures, and the administration of the program was handled in a standard, bureaucratic manner.

The cases indicate that the scope and focus of each Pairing differed from one university/college to the other. Harris University, influenced by the Dean of the School of Education, pursued a broad, long-term approach to the Pairings. The focus was multi-school and multi-year. Massachusetts State, on the other hand, seemed to respond quickly and directly to its partner's specific, short-term needs. While Dunfey did not pursue the highly coordinated, comprehensive approach of Harris, its Pairing projects tended to combine both short, specific projects, with multi-school, multi-year efforts.

One other area where these organizational differences became manifest was in the manner in which they conducted, evaluated and employed the needs assessment which was required under the 636 funding process. This process of identifying and planning around School District-identified needs provides an interesting barometer of the inter-organizational relationships that existed in each of the Pairings, between the university/college and its corresponding community school district at the onset of the program (see Needs Assessment, Appendix A, pp. 177, 180).

In general, therefore, the characteristics of each university/college varied. However, in no case was their involvement more than partial. While the Pairing program occasionally received high-level support (as in Dunfey) or school-side priority (as in the SED at Harris), only part of any of the university's/college's relevant resources and organization was engaged in the school improvement at any point in the history of the program. Not only was university/college involvement only partial, but occasionally those in coordinating the Pairing efforts were, or became, peripheral to the organizations themselves (see Role Analysis, below). Evidence in the cases strongly suggests that for university/college faculty, participation beyond the coordinator level was, by and large, marginal.

Community School Districts as Organizations

Boston, like most large metropolitan centers, is not a single community, but more than most, it is a patchwork of diverse racial, cultural and socio-economic nieghborhoods, each in close proximity to the other, but, in many ways, each being separate and distinct from the next.

When the U.S. Court ordered the creation of Community School Districts in 1975, it attempted to create geographic areas which might better address the issues of social and racial balance, access and equity. Organizationally, each community district is similar to the others and the formal structural arrangements of each district are approximately the same. However, different community composition, interests, styles of leadership and decision-making result in Community Districts that are as varied and different as are the universities and colleges with which they are paired.

The cases provide numerous examples of the differences that exist not only between districts, but between schools within the same district. Particularly striking differences are noted between elementary and secondary schools in all districts. Differing age-group, programs, curricula, composition of staff, and modes of administration-staff-student interaction result in profoundly different organizations. The cases clearly indicate an important distinction between elementary and secondary schools in the three districts involved in this study. This difference goes beyond issues of leadership, decision-making and community composition and raises questions about the utility of considering them together as "schools" in other than a generic sense. Secondary schools appear far more complex, problematic, and resistant to change/improvement interventions than do elementary schools. In all the Pairings, the cases indicate that direct involvement in a high school project was fraught with difficulty and required a much higher level of investment of time and energy with a much lower probability of success. Conversely, elementary schools and their faculty appear more receptive to certain types of intervention, training and improvement efforts.

In each community district, the personality, style, and interests of the District Superintendent, as well as any district coordinators and administrators, had an important influence on the course and content of that District's Pairing projects. Yet, as with the universities/colleges, participation in the Pairing was usually only partial, regardless of the priority and support given the concept by various district superintendents and/or administrators.

The three Boston School-University/College Pairings examined in this study support the notion that considerable differences exist between schools as organizations and universities as organizations. Furthermore, there appears to be as much variance among schools or universities/colleges, as there exists between them. Indeed, the differences between elementary and secondary schools within a single district at times appear to be greater than between a school and its corresponding university partner. However, the cases indicate two areas in which these systems (Schools-Universities/Colleges) vary in their basic orientation--first, in organizational senses of time, and second, in response to incentive systems.

There has been a general lack of attention paid to the various ways in which organizations conceive of, structure and use time, and even less has been written about the effects these differences have on inter-organizational arrangements and behavior. Such work as has been done has usually addressed the more obvious differences of time perception/use between one culture and another. A careful examination of the cases reveals that there are several problems associated with the various ways in which schools and universities/colleges structure and perceive time.

One issue of this nature concerns the differing foci that universities/colleges and schools took toward implementing the Pairing Program. Harris took a long-term view, as did the Court. The cases show that the public schools and their members perceive such programs on a much shorter basis. This difference created problems for Harris and District A. Massachusetts State was able to share in the public schools' time frame, and consequently met the expectations and needs of school people in that regard. By and large, however, universities/colleges and schools operate on different time structures. School people anxiously sought answers to the question, "What do I do on Monday morning?", and the different perceptions of time between public schools and the institutions such as Harris and Dunfey were somewhat similar to the subtle, yet important, differences in perception between teachers and technocrats (Wolcott, 1977).

Although similar, public school and university calendars are structured differently. Furthermore, day-to-day needs of a classroom teacher are different than those of the university instructur or researcher. The cases reveal the almost naive expectation on the part of school people for "quick solutions" to complex problems. Yet, these are their needs. University people, especially those engaged in some form of research, operate on semester, quarter, grant and funding cycles that do not readily complement the time sense of school teachers. As a teacher said: "In here, it's one day at a time."

The 636 proposal, approval and funding cycle added a third dimension of time which both aided and complicated the Pairing Program. On the positive side, it presented both organizational groups with a similar issue: how to learn about and apply the requirements of 636? Clearly, university/college participants had greater expertise, in general, with

proposal and funding issues. Therefore, the annual funding cycle became the basis for cooperative learning. In order to receive funds, school teachers and university faculty had to coordinate their efforts and knowledge, and in so doing, were able to develop a better understanding of each other's respective organizations around a common problem.

The difficulty with the annual funding cycle was that it presented a significant structural barrier to prolonged, coordinated development of university/college-school programs. While other aspects of the 636, BEEO involvement will be discussed below, the time structures of the program had important ramifications on the Pairings and on the type of activity that came to characterize these projects. It was clearly the planners' and Court's intention to create a comprehensive, long-range series of inter-organizational arrangements. However, one unanticipated consequence of applying 636 funds to the Pairings was that the long-term programs were poorly matched and inconsistent with the 636 time frame. The one-year, plan, produce and evaluate nature of the 636 was not altered, nor was the BEEO enlisted to adapt proposal-evaluation cycles that would have been more consistent with the aspirations of the planners. What did seem to meet the time constraints of the BEEO process were short one-year or less projects. These represented a compromise which tended to assume an even shorter time focus due to the needs and demands of school people for short-term responses. Furthermore, they made more coordinated, cumulative cooperation exceedingly difficult and unrealistic.

d.) Incentive System

If the Court-created structures can be viewed as the engines of the Inter-organizational Arrangements represented by the Boston School-University/College Pairings, then the funds made available to the

Pairings through the BEEO can be seen as the substance that fueled them. Figure 2 on page 10 provides a concise account of the level of funding received by the Pairings between 1975 and 1979 inclusive. In general, it was this funding which served to underwrite and promote participation in the Pairings. However, incentives were not limited solely to BEEO/636 funds. The environment and traditional associations accounted for some pairing activities, and, as we shall discuss below, the various needs hierarchies provided an important source of participant/organizational motivation. The cases clearly suggest that whether through coercion, association, motivation, or incentive, each organizational sub-system, unit or group had to perceive some benefit from the interaction or the Pairings were not considered to be effective, important, and did not generate results.

> According to the College Coordinator, when a project was discontinued, it was usually because 'we didn't feel there was much real interest on the school side, or we didn't have the competent correct people, or we went ahead and found the logistical problems of doing it or the organizational difficulties were too much.'

It was the presence of limited, but assured, BEEO resources that provided the financial basis for the Pairings. These resources became the primary incentive mechanism for participants in both systems (public school and university/college). In fact, the cases indicate that initial participation tended to vary directly with the amount of funds made available to a particular project. They further indicate, however, that increases in project resources over time did not necessarily result in increased levels of participation. Therefore, the effectiveness of funds as an incentive seemed to be greatest in the initial stages of a project. Evidence from the cases also suggests an association between the amount of money invested in a project or program, and the level of effort or outcomes of that project.

> The money allocated for 636 collaborative activities during the second year of the pairing was less than that allocated for the first year ($91,537 vs. $125,000). Correspondingly, fewer collaborative-sponsored programs transpired during the second year of operation. Still, the drop-off in pairing activities was disproportionate to the decrease in the level of funds available.

When school staff were paid for their participation in a workshop, training session, etc., this appears to have promoted more positive perceptions of the experience.

> The summer activities ended on a high note of enthusiasm and hope. One participant, a professor in the Reading Department, said, 'We got paid, they got paid, and as a result, the people were really cheerful and positive, and we had a profitable workshop.' The summer period was also useful for the exchange of information. The three parties got to know each other, and began to develop trust.

However, 636 revenues appear to have been more important at attracting university/college faculty to offer workshops, service as consultants, or provide some other services than at promoting school teachers' participation. The cases clearly indicate that in the most effective/successful pairing projects, 636 monies were only a partial inducement for both university and school participants. Again, different organizations responded in different ways to the presence of funds. BEEO regulations tended to create a two-standard system which limited direct payments to teachers for their participation, while offering university/college faculty fees, albeit minimal, for presenting workshops and serving as consultants.

The presence of 636 funds also had some negative or undesired consequences for the pairings. In the previous section the effect of the BEEO process, and the annual funding cycle on the promotion of projects was noted. The short term, limited focus of the BEEO process

combined with other factors, such as structural complexity and ambiguity/uncertainty to create an array of tasks and problems that encouraged interaction around limited, focused projects which would meet the varying structural procedures and requirements without exposing participants to undue risk or involvement. Because 636 regulations prohibited teachers from being paid for their participation, an important incentive mechanism was removed. To borrow from Wolcott, it was a system designed for technocrats, not teachers.

> Because the funding mechanism had been set up so hurriedly following the Court Order, the application was confused, marked by misunderstandings between college and district personnel and the state agencies responsible for dispensing funds...Part of the confusion may also be traced to differing conceptions of how formal the proposals were supposed to be.

Another issue that arose around the use of 636 funds to finance the Pairings was that of goal displacement. The cases provide numerous examples of Pairings adopting or supporting university/school activities and projects that had been developed informally, prior to the creation of the Pairing or the court order. These activities were usually the result of some association between a teacher or teachers and a university/college faculty member. They were generally spontaneous and aimed at addressing some mutual need on the part of the individuals involved. When these activities and projects were brought into the Pairing Program, they began to receive and have to compete for 636 funds. The cases suggest that once such programs were subsumed by the Pairings and the 636 process, they lost their independent and spontaneous character. As funding levels diminished or moved on to other projects, the likelihood that these earlier efforts would continue without funds, as they had in the past, became

increasingly remote. Thus, grantsmanship began to replace mutual need fulfillment. Therefore, the introduction of 636 funds into the area of school-university/college cooperation did tend to displace some programs which had not required such formal incentive structures in the past.

Not all funding came through Chapter 636 and BEEO. Each of the three universities/colleges in these case studies did make direct investments into the Pairings Program. Yet, the use of university resources to underwrite activities of the Pairings became a disincentive for prolonged involvement with the public schools. Given the increased competition for tight resources, university advocates of the plan including the President of Dunfey and the Dean of Harris' School of Education, became hard pressed to justify diverting precious funds for participation in a program that was clearly peripheral to their organization's major mission.

> The disincentives for the individual professor were greater than the incentives. There were no institutional rewards for participation, even non-monetarily. Services in the pairings did not reduce teaching or advising loads...Service in the pairing was of no special consequence in tenure, promotion, or merit pay decisions... For all but the very naive and the very secure, this was a powerful disincentive at a time when the faculty was shrinking due to declining enrollments...

Therefore, participants in the Pairings came increasingly to rely on 636 funds to support the Pairing effort. As the availability of these funds grew, other sources of revenue were withdrawn, and when the 636 funds began to decline (post 1979) the level of activity in all the Pairings slowed noticeably.

Summary

The Boston Pairings are inter-organizational arrangements (IOAs) that share specific, but not necessarily unique, characteristics which have exerted a strong influence on their direction, activities and productivity. They are broad, structurally complex arrangements which were mandated by Federal Court Order. In other words, they were imposed on at least one of the participants, the Boston Public Schools.

Another characteristic of the Pairings is that they parcelled the School System into semi-independent sub-systems (Community School Districts) and arbitrarily paired each district, and in some cases individual schools within a district, with over fifty educational, cultural and commerical organizations, both public and private. Although broad and comprehensive in its structural planning, the Court was vague and removed with regard to the implementation procedures and evaluation criteria it wanted the Pairings to use.

Some funds were contributed to the Pairings by the cooperating educational, cultural and commercial organization, but the majority of funding was provided through an organization that was initially external to the Pairings--the BEEO. These funds provided a limited though reliable source of funds which were additional to all parties' regular budgets.

While this study deals with three university/college partners and three School Districts, the Boston IOAs were, in fact, at least tripartite in membership, in each case. They were Pairings inasmuch as the Schools were 'paired' with one or more outside organizations from the

educational, cultural and commercial sectors. The point of focus was not the IOA, but the school, and there is little evidence of coordination or cooperation among or between the participating organizations outside of the individual school or district. In addition, these IOAs involved parts of organizations and systems - they were not institution-wide arrangements - with the possible exception of the Client System, the Boston Public Schools Even here, there is no evidence in any of the 'Pairings' of total or District-wide involvement in any program beyond the administrative or district office level. Lastly, it must be remembered that the Pairings were created to improve educational practice and promote excellence. Nothing more was specifically referred to in the Court Order creating them.

In summary, then, the Boston Pairings were inter-organizational arrangements (IOAs) with the following characteristics:

- broad, complex structures
- designed and imposed by Court Order
- vague as to implementation or evaluation criteria
- externally funded
- school focused but at least tripartite in membership
- decentralized, involving only partial or sub-units of participating organizations
- created to promote improved practice and educational excellence.

2. Historic/Environmental Filters

The fact that the U.S. District Court felt compelled to intervene in the Boston Public Schools is itself a testimony to the historic and environmental complexity surrounding the desegregation of Public Education in Boston, and the Pairing plan which grew out of that effort.

Had the environment and historic practice been more receptive to the issue, the Court's action would have been largely unnecessary. However, it is important to distinguish between the desegregation plan (Plan I) and the Pairing Plan (Phase II) of the Court's Orders. Community Districts had been developed and created to deal with the question of social-racial balance, access, and equity. That was accomplished under Phase I. The Pairing Plan (Phase II) focused, not on the controversial issue of racial integration, but on the question of educational excellence and improved practice, a goal with which few could object. Therefore, despite the publicity and opposition that grew in the general environment around the Court's desegregation order, the Pairings were generally accepted as an attempt to improve the schools by inviting broader institutional, community and individual participation.

This distinction is important, since the cases support the view that few of the Pairings activities dealt with increased minority access, educational equity, or desegregation per se. The major thrust of most of the projects in this study involved improving present programs and improving student achievement. This occurred despite the fact that one of the main requirements for eligibility for 636 funds was that they be used to promote minority access and educational equity. It is reasonable to assume, had the Pairings been designed to promote integration alone, that they would have met with higher levels of community opposition and resistance. As it was, most of the resistance to the idea came from school poeple who were fearful of being overrun and swept aside by massive university and community involvement in the classroom.

> It was as though, before (their) arrival, nobody had done anything in the schools. Now teachers who had been slaving in rough situations up to that time didn't appreciate that kind of talk.
>
> (District C Administrator)

The expectation of those in the schools of a "take-over" or "over run" was, in part, due to the level of uncertainty and ambiguity which surrounded the Court's new structures and pervaded the environment in general. Aside from the issue of racial desegregation, the mid 1970's was a period of tremendous stress and change for America's urban centers and their school systems. Boston was no exception. Demographic shifts and decline were changing the socio-economic, ethnic and racial composition of student bodies. Economic decline, especially in the Northeast resulted in a scarcity of resources and revenues while increased costs tended to pit one segment of the public sector against another. Schools became, at once, overcrowded and run down, or underutilized and closed down. Retrenchment and redistricting created a 'siege mentality' among many in urban public education. The result was an environment of stress and uncertainty.

There is evidence in all three cases of this stress. There is also evidence that the process by which the Court intervened and the complex structural arrangements it created to accomplish its purpose only added to the levels of stress and uncertainty which existed in the environment. By temporarily sweeping aside the Boston School Committee and creating new community districts, the traditional political forces in the environment were temporarily stunned or neutralized.

> The teachers and other school people were uniform in opposing the desegregation provisions of the Court Order, but resigned to it. Parents' attitudes ranged much more widely, from strong support to strong opposition. Yet all perceived the word of the Court to be final. (Dentler and Scott, 1981, p. 34).

This heightened the sense of confusion and uncertainty concerning the Pairings, but it also contributed to the general perception that the Court's structures and mandate were untouchable, and could not be changed. Thereby, an important aspect of community influence and feedback was shut off. Resistance and opposition to the Court was publicly oriented and emotional, contributing to a general atmosphere of resentment and impotence.

Publicity was an important way that the Pairings tried to positively affect environmental attitudes concerning university/college-public school activities. In fact, several of the projects undertaken in each Pairing studied had a specific public-relations component, which, it was hoped, would garner additional community support for the project. However, here, too, there was a negative side to securing publicity. Often the need to gain recognition for one side of the Pairing, i.e., universities/colleges, became a source of contention between schools and universities/colleges.

> A district administrator, recalled in an interview with a local newspaper,... [a] problem related to the colleges' tendency to steal the public credit for accomplishments which ought to be shared with the district.

In one district, the college's tendency to steal public credit for accomplishments which were perceived as being due the District became a source of antagonism between the school district and its Pairing partner.

The general environment did not tend to have an overly negative effect on the activities of the Pairings. If there was opposition or resistance, the projects proceeded, although with some difficulty. If the environment proved positive, as with basic skills programs, it tended to accelerate and support the Pairing project. An important element in this regard was the presence of a history of previous involvement and interaction between the school district and its university/college counterpart. This

was particularly true with regard to the experience of specific actors or individuals in the Pairings. The more prior, successful involvement one had in public schools, being from a university/college, the greater the chance that he/she would work effectively or be accepted in their role as a Pairing participant by Public School people.

3. Inter-Organizational Processes

In analyzing the three Pairings, four specific aspects of the Pairings' activities were examined. There were three process categories: stages of interaction, activity/initiation, and knowledge flow; and a series of behavioral attitudes and values known as 'process dimensions'. Each process category was divided into seven stages ranging from non-interaction to collaboration. The process dimensions reflected levels of power, certainty, needs, understanding, trust, benefit and maturity that participants brought to the various processes.

A content analysis of each case reveals no clear evidence of data on institutionalized, collaborative activities (State 7). Likewise, there is little data to support the belief that the Pairings resulted in non-interaction or increased isolation of the participant organizations (Stage 1), at least for the time period of the study. However, there is some data indicating that the Pairings did achieve some levels of inter-organizational cooperation (Stage 6). Interestingly enough, these data were collected from projects and experiences from the fifth case category (non-636 funded activities and projects).

The vast majority of inter-organizational process data falls into Stages 4 and 5. These stages have been labeled inter-organizational "Selling" Behavior, because:

> ...in this type of inter-organizational interaction, there may be some power exerted, but it is generally predicated on some level of understanding of needs, benefits, and maturity (see below). In this situation, various elements may form into temporary bonds for the satisfaction of various needs. But these compounds may tend to dissolve or deteriorate as the needs are met, and there is little likelihood of a new and permanent arrangement resulting from the interaction. In the case of 'selling' interactions, the initiative will reside on one side of the pairing or the other, depending on the nature of the pairing relationship at that point in time, and reflecting the agenda of either the service provider or the client/user. It is likely that there will be knowledge transfer rather than exchange, but this will generally be for the satisfaction of differing needs or revolve around differing issues.

Indeed, this description does seem to fit most of the projects studied in the three Pairings. For the most part, the university/college was both 'seller' and service provider.

The fact that all three Pairings seemed to reach a state of equilibrium at this level may be due to several factors: 1) the assumption held by the Court that viewed the schools as 'client' in the Pairings; 2) a function of the structural constraints inherent in the inter-organizational system; 3) a function of the time period during which the data were collected, and the cases were prepared; 4) a function of the nature of university/college-public school interactions; or 5) some combination of the above.

Certainly, the fact that the Court conceived of, and established, the Pairing plan without the active involvement of, or even close consultation with, the Public Schools displays a bias and an assumption that was at the base of these Inter-Organizational Arrangements. Schools were "in trouble", and required assistance from universities/colleges and

communities to improve educational practice and performance. Thus, schools were to be the client-recipients of the Pairings, not equal partners in a collaborative agreement. Fear and ambiguity over what being a client-recipient meant occupied school participants in the early stages of the Pairing experience. A similar ambiguity and fear surrounding the definition of "service provider" gripped university presidents and faculty at approximately the same time.

> Throughout the history of the Pairing, several problems persisted. In the early stages of the Pairing, both the College and the District went through a process of defining the limits of the College's involvement in the District. As expressed in the Court Order, the goals of the Pairing were broad; consequently the College Coordinator 'assumed we had a very wide canvas on which to run.' However, he soon learned that the District had a much narrower conception of [the College/University's] involvement.

In addition to the plan's basic assumption that public schools would receive help, the structures, requirements, and funding mechanisms established by the Court, and by the BEEO (see above) could easily have kept the two systems from achieving more or doing less in the way of inter-organizational activities. The Court's comprehensive structures and far-reaching authority effectively prohibited the schools from assuming an isolated or non-interactive stance. The infusion of 636 funds did, initially, provide an incentive for some interaction between the schools and universities/colleges. Yet, the uncertainty around the Court's Orders, short term, one-year focus on the funding cycle, lack of coordination, and perception of unalterable structures, may well have prevented inter-organizational arrangements from moving to higher stages of interaction, even when participants began to develop a better sense about

each others' organizations. Thus the structures themselves may have become an obstacle to continued cooperation.

Regarding the question of time, it is clear from the cases that the Pairings did advance from stage to stage over the period of the study. Starting at Stage 2 (wariness - imposed - knowledge placement, outside-in), they advanced to show some evidence of cooperative interaction (Stage 6). However, the bulk of the case data seem to indicate that collectively the Pairings reached an equilibrium level between Stages 4 and 5 (Selling) by their third year. There is no clear indication of subsequent advances in the inter-organizational process stages after that time.

While each Pairing differed in the frequency of data concerning the various types of inter-organizational behavior (telling, selling, or sharing), there were similar patterns in the ways in which all three School-University/College Pairings functioned as inter-organizational arrangements. Each stage of interaction was accomplished by appropriate and necessary behaviors in terms of initiating activities and knowledge flow. In fact, when participants were wary of the Pairing, it was appropriate to impose activities through administrative fiat or some form of authority, and knowledge was literally placed into the process.

> ...under present circumstances, he was aware that the majority of teachers was unable to use the course's content...ultimately...there were two additional requirements for successful implementation...the first was more time...second...instructional changes depended heavily on administrative fiat...he was convinced that only administrative order would lead to implementation on a large scale.

However, when the Pairings had developed some history and had achieved some levels of mutual understanding and respect, imposed

activities were not appropriate. More often, activities would be initiated by either school or university participants who would try to "sell" the idea to their own and opposite group.

As the Pairings developed, they all went through a several-step process around inter-organizational learning. These steps might best be described as follows: 1) learning about each others' intentions in the Pairings; 2) learning about the Pairing system, its structure and expectations; 3) learning about grants, funds and the inter-organizational system; and 4) learning about each others' organizations, capabilities, and problems. Once the participants had reached a level of understanding which included these four steps, the focus and nature of their interactions appears to have become more comfortable and spontaneous.

a.) Activity Types: An Analysis

An examination of the four types of activities studied in the cases: use of facilities, direct services to students, improvement of practice, and enhancing school system capabilities for self-improvement, will illustrate this process role in these inter-organizational arrangements.

Use of Facilities

Pairing projects that involved mostly school use of university/college facilities occurred most often in the latter's gymnasium or athletic plant, including overnight use of the camping and outdoor retreat centers of the university. In addition, there was use of the classroom space, with students attending college classes individually and groups making use of facilities such as language labs and other equipment. Also, at Harris, teachers received University library cards at no charge, and could borrow films at no or reduced charge.

The University Coordinator usually assisted project personnel in working out the arrangement for such uses. University administrators had to work out problems in the areas of security, scheduling, transportation, and insurance coverage to such requests. Concerns were also expressed about being "taken over" by a "flood" of students from the schools.

University resources are generally wide in scope and not often deep in numbers. Thus, many kinds of facilities could be found somewhere in a multi-school university, but not always in the quantity or at the times needed in a school's program. However, school people and especially parents and community leaders often assumed that the resources of the "rich" universities were limitless and could be made generally available. Both groups had the expectation that the pairings would lead to an increased flow of university resources, particularly money to the schools. The University Presidents' Steering Committee anticipated this problem in its first dealings with the Court and proposed protection for their institutions in the form of contractual agreements with the School Department. These never materialized, but clear boundaries maintained by bureaucratic application procedures appeared early.

University physical resources were seldom fully integrated with the resources of the schools as organizations in the pairing projects. The parameters of a school's use of a university's plant often was spelled out in the project's annual proposal, which was ultimately ratified by the state BEEO. Project funding flowed to the pairing through parallel tracks, some directly to the schools and some directly to the university. In most respects, this structure operated to increase incentives for pursuing common activities. However, some of these funds were used to

pay for use of university facilities. This practice stimulated a hue and cry from schools and parents about the sincerity of the universities and their alleged "rip-offs" of the pairing program.

Use of college faciliites especially affected the environment of the school system in that high school and elementary students of varying backgrounds gained access to these previously forbidding "halls of learning". While no direct evidence is at hand from the cases, previous studies suggest that such contact with another educational subculture can be a learning experience as well as a source of motivation to remain in or return to this kind of setting in the future. Anecdotes from the three pairings indicate that students who more than toured the college that was paired with their school were positively affected by their experience of undergraduate life. Connecting teachers and administrative staff with the university library and other university resource centers, whether or not they were engaged in one of the projects sponsored by the pairing, encouraged knowledge transfer among many newer and younger teachers interested in graduate degrees and/or salary increments.

The process of knowledge flow and utilization is not immediately apparent in many instances of the use of facilities. In order to put forward a credible claim that knowledge utilization did occur, we need evidence that learning about learning and learning about the environment of a university/college are fostered by part-time activity on a college campus. Or, we could accept data showing that individuals who (from the schools, university or community) arranged facilities use acquired utilization skills and knowledge that they applied with effect in subsequent negotiations over a pairing project. As far as we know, no such data were collected.

Direct Services

The direct services category includes activities such as conducting classes in schools, providing tutors and assistants in reading programs, providing assessment skills and services to determine remedial reading needs, participating in and taking responsibility for outdoor education events, setting up and monitoring new equipment in a school, and supervising students producing a student publication. Direct services such as these were major parts of some projects and subsidiary parts of others. They are, in general, the assumption and responsibilities by university persons that are ordinarily borne by school personnel.

School people usually wanted as many direct services as they could obtain. One of the regular questions by the School Committee to evaluate projects for approval was "How much direct assistance and service are you rendering to the schools and students in the project?" Parents and the public in general believed that direct services to students were the desired applications of university resources. They, and most educators, did not view the university so much as a source of knowledge as a supplier of general assistance which, of course, had to be boiled down to "reality" and made "practical". School persons did not see themselves as needing new ideas and solutions from the universities: they wanted help in the form of direct assistance.

School people took the stance that they themselves would do a lot of tnings differently and better if they only had time and resources. We have little systematic data, but we infer from anecdotal material that teachers and administrators would say to the university, if they could: "Look, we are overburdened. If you want to help, do some things that benefit

the kids. We as staff and teachers are not deficient in technique or knowledge. It is the kids and their special needs that need attention. You must come into the classroom or into the shop or do a program and you will see then as we do what the students need. Instead of your wasting your time and ours doing your word games about schools, come and do things that help right now. We are so short of people! I could do all the things I want to do if I had a smaller number of students in my class. There are all sorts of special programs and activities needed I can't fit in. It would be most helpful for you university faculty and students to supply them. You have the facilities and money and lots of spare time to help the kids directly. That is what we need!"

In the case study material there is no suggestion that the school people wanted things done qualitatively differently from how they were being done, or that they were interested in observing "demonstrations" which the university people could provide. The school people knew that the professors could help them deliver new programs and services but basically they wanted them to accept their existing system and provide interesting "add-ons" such as tutoring students, use of campus facilities, and scholarships. "Systems change" was attractive to only few on the school side.

Inter-organizationally, acceptance of university persons as integral parts of the school system was retarded by job definitions and Teachers' Union rules. When potential services to be provided by the university overlapped with services already supplied by persons in the school, the university's contribution was often rejected or ignored. The school's objections were often phrased as questions about control over who does what and under which circumstances.

When limited in scope, and when clearly not duplicating functions discharged by school people, direct service projects were accepted. But as activities became more organized and involved larger numbers, there were larger inter-organizational issues to be resolved. In one instance in the cases a direct service project was severely curtailed after extensive negotiation with the schools. We attribute this to the Teachers Union, which hoped the central administration would include the same services in the regular budget.

When very large in scope the pairing coordinators sometimes worked out ways for the program to become mutually beneficial. Harris' Student Placement Project secured increased numbers of students to help in the schools by requiring education majors in all four years to serve as observers, tutors, and assistants with limited duties, until in the last year they performed as full fledged student teachers.

Most of the projects transformed resources of the university into resources of the schools through the medium of added staff the staff time. In some instances, new techniques and modes of educating students were brought in via the direct service route, with little evidence of transfer to the school's basic repertoire. Many faculty and college students thought their basic assignment was to change school practices, but communication was infrequent, due in part to the absence of a forum for examining the potential of the university persons' techniques and approaches.

While it is difficult to detect much knowledge transfer in the provision of direct services, this mode had other value. University/College leaders looked upon direct services as means of "getting a foot in the door", or "validating our sincerity", or "changes to demonstrate innovations and model teaching behavior". Through providing direct services

to students the university demonstrated its willingness to work with the district in more complex and transforming knowledge utilization projects. University people expressed resentment when this expected elaboration of activities with the school did not occur or was truncated. In our case reports, we have a professor balking at unpacking boxes of new equipment. He felt that he had done enough and that school people should complete the next steps. Similarly, the professors in Massachusetts College's Environmental Studies Project found themselves responsible for curriculum design and actual teaching, with school staff acting like by-standers. Instead of planning with the teachers how the latter would perform, they were expected to be teachers themselves. Conflicts of needs and expectations thus emerged.

Improvement of Practices

Curriculum development workshops were the main mechanisms through which the improvement of practices was assayed in all three Pairings. This type of activity was familiar to both sides. Workshops on special topics were conducted by university/college people in many schools and with diverse people in these schools. Individual consultation to individual teachers and to the staffs of existing or pairing-sponsored projects also occurred.

Improving practices is defined in this report as altering the technology, practices, curricula and other means of achieving the goals of the schools. Because of our special interest in this category of pairing activity, we shall examine each of the inter-organizational sub-systems for whatever insights we can obtain on its relationship to practice improvement.

The formation of the pairings led to the expectation in the environments of the schools and the universities that major improvements in the schools' practices would be attempted. This expectation produced among school people both a limited receptivity to trying out innovations, on the one hand, and a testing-rejecting mental set, on the other; they displayed a kind of "reluctant readiness" for knowledge transfer and exchange. Related events in Boston, such as the Court's other rulings, backlash to busing, white flight to the suburbs and private schools, and the shortage of funds for the schools further confused the situation.

The resources of the universities/colleges affected the improvement of practices in several ways. From them, "people" resources were made available to the schools, and the ideas put forth therefrom were utilized, albeit with some resistance and scrutiny. University persons had access to various formal systems of retrieving educational knowledge (e.g., ERIC, academic journals), but they did not make use of them systematically, or refer to them covertly. University experts appeared well-informed; they presented themselves as users and transmitters of craft knowledge, and seem to have consulted the data banks infrequently as part of their work in the Pairings.

The possessor of craft knowledge tends to believe that his/her knowledge is good knowledge, and that what is available in resource bank or other pools of researched information is not necessarily relevant. The syndrome of "not in my experience" may well preclude the use of a wide range of new practices. In short, the pairing circumstances tempted the university consultants to rely heavily on their ideas to be tried in the schools. Further, the review process did not really scrutinize proposers'

ideas; if school people and parent/community groups liked a notion, it would be funded, and implemented. In one instance, the Dunfey Multicultural Curriculum Project, the University Coordinator strongly and successfully advocated his definition of the type of curriculum needed and the curriculum formation process required. There are clear implications in this project that the other people in the pairing knew this was "his baby".

It is unclear whether various projects would have moved ahead had there been a rigorous peer-review, as compared to other forms of evaluation and scrutiny employed by parent committees and school persons. Review and evaluation of the Pairings' activities were part of the proposal and funding process. Some summative evaluations and an occasional formative analysis were conducted by individuals outside the Pairings. The Boston School Department commissioned these small inquiries by outside organizations through a bidding for contracts process. In all cases these evaluations, required through Chapter 636, were limited in scope (when compared to the total range of activities). They were defined by participants as non-threatening, low-risk exercises, since little use was made of the data collected at either the individual project, Pairing, or inter-organizational system level.

Chapter 636 funds from the State Department of Education were the crucial financial resources of the pairings, although the university/college and school budgets also showed contributions in kind. The formal procedure for allocating money to projects was the same for all. However, the three pairings varied in the ways the process actually worked. In one university a serious effort was made to inform parents and community representatives about projects and procedures so that they could make

informed judgments. In another pairing, parent and community involvement in the approval process was a ritual "signing off".

The goals of the universities/colleges for their involvement in the Pairings were first public and community service, thus underscoring their desire to generate publicity and notoriety. This goal was coupled with providing in-service training for teacher/practitioners. Components of both these aims were included in many of the projects studied in the three cases. Clearly, these goals were in conflict with the schools' desire for their partners to provide direct services and addative programs for students.

The paired universities/colleges possessed limited technical means for reaching the goals of the Pairings through the application of their own regular teaching methods and policies. They had, in general, only limited experience with urban schools and with the particular sub-culture, problems, and value systems of the Boston School Department. They thus sometimes advocated strategies counter-productive for improving school effectiveness, and their understanding of urban schools and of methods appropriate for working in and with them was still developing after five years of pairing work. The universities' increased savvy about Boston and urban education is the prime example of genuine knowledge exchange that we encountered in the study.

The preferred personality style of the university/college of operating was not consonant with the preferred personality style of the schools. Perspectives differ in that university faculty members have a broad and varied concept of the work day, while precollegiate educators have clear, time-bound definitions of the work day. This difference led to

clashes over times for meetings and work sessions, leading university people to negative conclusions about the attitude of school people to new practices. University consultants often neglected to try to arrange released time for school staff who were working with them to incorporate new practices, since they were unaware of the importance of this in "school culture".

> ...It looked like we were really getting our necks into the social customs of the school...There was a social-moral agreement, if you will, an informal understanding of what would be socially acceptable. ...The unacceptable one was mucking around in interpersonal relations between students and teachers trying to solve human relations problems. Clearly, it was beyond what we were expected to do.

We infer that certain improvements were tried, decayed, and eventually disappeared because of lack of attention to this matter by the consultants and school administrators. From the materials at hand, we conclude that many pairings' efforts required more time and energy than most school persons felt could be incompassed within the definition of their work that they shared. Some time during school hours was released for training workshops, but almost none for the process of putting new practices into operation in the classroom.

Entrepreneurial persons and innovation-minded persons in the schools occasionally made contact with those of similar sytle in the universities/colleges. However, our data do not show consistent matches between these personality styles in the pairings projects. A university coordinator and/or a university project director sometimes found a psychological analog among the district superintendent, school pairing staff coordinator, or the principal of a particular school.

The ideology and values of the research university/college (such as Harris) emphasize new knowledge and the frontiers or exploration. The ideology and values of the schools revolve around stability as a requisite for the conduct of educational business. The interplay of these two ideological perspectives is reflected in the kinds of activities aimed at and achieved in the pairings. The pairing that includes the university with the largest commitment to research in its program beyond the pairing sponsored the most projects that moved to Activity Type #4, enhancement of capabilities for improvement. The pairing with the smallest "new knowledge" orientation had the largest porportion of projects in the direct services category.

Enhanced System Capabilities for Improvement

Activities deliberately designed to help schools improve their capabilities for upgrading practices took on several forms:

- needs assessments done together by university and school people;
- workshops focused on spreading new practices established in one school building to similar schools in the district or system;
- establishment of planning groups in a district to develop district-wide programs; these were as often initiated by school as university people;
- organization of a cluster arrangement whereby the benefits of accepting student teachers from the university in a district's schools are channeled to a joint planning group in the district that decides on their use on the basis or previously-established priorities;
- experience in the structure and dynamics of the pairing itself, through the sharing of data, reviewing proposals, discussions of priorities, and jostling with other districts in the city; this increasingly

> self-conscious consideration of district and system-wide issues enhancing a growing realization of ways to strengthen the School Department's, the district's, and schools' capabilities for enhancing their own potential for growth.

While not abandoning the search for the best techniques to use in specific situations in the educational program of the school, participants began to realize that the greatest obstacles to improvement lay not in the absence of promising ideas or practices, but in the web of inter-organizational arrangements beyond but including the pairings, and analyzable in terms similar to those we have applied to their analysis here, that are the products of the last several decades of Boston history. For many participants, the key concept was "power". Power as necessary to effectuate change and improvements in practices. Power as needed to overcome the obstacles to change.

b.) Knowledge Flow: A Cross-Case and Cross-Product Analysis

Due to the manner in which each case was written, and the general organization of the study, there is a basic problem in trying to identify specific instances and types of knowledge flow. It is our conclusion that, at the formal level, there is little evidence to suggest specific incidences of knowledge flow employing educational research. However, we believe that evidence exists of other, less formal examples of knowledge flow that were typical and in keeping with the structures, culture and expectations that characterize these inter-organizational arrangements. Therefore, we go to some length to provide three perspectives which might be employed to interpret the data: below; Section V; and Appendix B. Drawing on the work of Allison (1967), Firestone (1980), and House (1979, 1980) we feel the implications of such varied perspectives

justifies such repetition and thorough examination. Furthermore, the methods of data collection, stylistic variations in the cases, and the lack of pre-post data collection or analysis make it difficult to precisely ascertain the impact of these inter-organizational arrangements on the level and types of knowledge flow and knowledge use examined in this study.

This part of the cross-case analysis employs crude inductive methods. Two approaches are used: one utilizes data from a rating scheme applied by each case writer to their own materials, both written and informal; the other (Appendix B) deals with ratings made by a senior staff member of the case writers' penultimate drafts. The two approaches process the same material semi-independently and arrive at very similar conclusions.

The two analyses are intended to explicate how various Activity Types (see a. p. 97) and Knowledge Types interrelate in the three cases. In this section we search for the typical types of knowledge flow employed (transversed or exchanged) in the simpler and in the more complex pairing activities.

Cross-Case Analysis of Knowledge Using Case Writers' Ratings

The three case writers provided summary ratings for each case and for each project, upon conclusion of their interviews and writing.* Being so deeply immersed in the details of the cases and projects, they found this difficult to do at first. However, all three ultimately did complete the task of filling out the rating sheets.

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* At this point in our study, the time dimension had not been integrated into the case writers analytic perspective. Therefore, these ratings are based on each case in toto. Time, however, is an important factor in the cross case analysis (see p. 147 and following).

The purpose of collecting the ratings was to force each field worker to crystallize his/her impression for use in cross-case analysis. The characteristics of a pairing prevalent in many of its activities and corners could be highlighted by our "experts" in this manner. We recognize, however, that the ratings may compress much diversity into sterotypes with halo effects blinding the rater to some data and events, or to forcing a centrality that does not exist. A second purpose on our part was to explore the possibilities and the limitations of quantitative methods applied to case materials available in the place of the data from surveys and questionnaires that are more commonly collected in studies of knowledge use.

The ratings were done separately by each case writer at the conclusion of data-gathering and after finishing the first draft of his/her case study. One form of knowledge was rated on each sheet, with six sheets used for each project. The first ratings required were of the degree of presence of this form of knowledge in the project, in the format of who was sending this knowledge to whom. The possible types of sender were identified: four from the university, four from the schools, and two from the parent and community groups. Potential university senders were: university coordinator, university administrators, university faculty, and university students. The listed school roles were: school administrators beyond the district, district administrators, the district superintendent, and the instructional staff. The community sector was divided into two parts: the organized body of parents and community representatives in the District (e.g., CDAC and REPC's), a looser group of parents of students directly involved in a particular project. These categories emerged from a

review of the cases and projects. Five numerical ratings could be assigned: none, or none observed (0); a little, or rarely occurring (1); some, or occasionally occurring (2); a lot, or frequently (3); and a large amount, or almost always present (4).

The second rating established the medium of the knowledge flow: e.g., verbal through lectures and courses; demonstrated or modeled; packaged as in a name brand curriculum. Here, combinations of the three mediums of transfer could be indicated.

A third rating focused the effect of the knowledge flow on the recipient's acting, behaving, thinking, attitudes, etc. Five categories were used, from no effect to a large amount.

The fourth rating concerned the nature of the interpersonal relationships between the sender(s) and recipients(s) of the knowledge. The five categories were: a nonpersonal transfer; primarily a transfer between persons in formal role relationships; some formal role connections with differentiated colleagueship; a lot of colleagueship, going well beyond formal task role; and mostly on informal relationship, with ready access by the recipient to the sender beyond formal roles. The context rated is the perception of the recipient, not the perspective and intentions of the sender of knowledge.

The finds from the ratings are selectively reported due to the absence of ratings for many parts of the schema.

Concrete situational knowledge, concerning both educational processes and utilization techniques, is the most frequent type in the three cases, accounting for 42%, 47%, and 53% of the knowledge transferred (see Figure 10, p. 114). Craft knowledge was the next most commonly reported

with 36%, 41%, 41%, respectively. Research knowledge was least frequent, at 16%, 17%, and 5%.

These finding concur with the qualitative analyses of case and project activities as reported by the case writers. We can offer several explanations for them. First, the pairing relationships were planned to extend many types of assistance to school districts, particular buildings and even specific classrooms. Thus oriented, the orientations of university/college personnel were to the concrete realities confronting teachers and other school staff. General ideas and research findings were usually transformed into craft knowledge by university/college consultants and validated by the craft experience of both sides. Most university persons could have dispensed educational research knowledge with some exceptions, but the school people usually knew in advance what they wanted in a specific curriculum skill training workshop. They demanded and most often received craft knowledge.

Educational knowledge from all three sources was transferred or exchanged slightly more often than the utilization knowledge in each of the three cases (50%, 61%, and 42%; see Figure 10).

We give way to speculation in attempting to explain these relative proportions. Because schools are fairly intimate settings, concrete situational knowledge looms large in the thinking of teachers. The relatively small light that research knowledge usually sheds upon any such situation may be one cause of these unexpected percentages.

Data senders and receivers of knowledge support this view. The most active exchangers of knowledge support this view. The most active exchangers of knowledge of all types in rank order were university

FIGURE 10: Types of Knowledge Flow/Use

	*Educator Situational	*Educator Craft	Educator Research	*Utilization Situational	*Utilization Craft	Utilization Research	Combined Exp. Res. *Sit	*Craft	Res	Combined Ed	Util
Harris University	26%	15%	9%	21%	21%	7%	47%	36%	16%	50%	49%
Dunfey University	25%	25%	11%	17%	16%	6%	42%	41%	17%	61%	39%
Massachusetts College	21%	16%	5%	32%	25%	0%	53%	41%	5%	42%	57%

*Sub-categories of experienced based education and utilization knowledge.
Ratings are based on case writer assessments of each project studied and were undertaken at the conclusion of the data gathering phase and completion of the first draft. Percentages represent the frequency of each type of knowledge flow/use indicated in relation to all incidences of knowledge flow/use in that case.

faculty, university coordinator, district superintendents, and instructional staff. The least active were, in ascending order, university students, parents of students in projects, community organization groups, and School Department administrators. The lowest ratings were given to university administrators. Instructional staff and district administrators were rated as generating more educational knowledge than district superintendents, who were rated as providing more utilization knowledge.

University coordinators were almost equally balanced in the ratings in their use of education and utilization knowledge, while university faculty leaned towards education information. In general, there was a positive relationship between the total amount of knowledge exchanged by a role group and the case writers' ratings of the effectiveness of the group: the more use, the higher the ratings. One interesting exception is the district superintendent, who with ratings of low knowledge use was assessed as having high effect. The power position of the district superintendent is evident in this. On the converse side, high knowledge use by the instructional staff had the least positive effects. It is possible that the case writers (and, perhaps, participants) saw teachers' knowledge outputs as inconsequential or irrelevant. In the same way, parents and the community groups, when they contributed in one of the knowledge forms, had low effects. But, the lowest of all role groups were university administrators and college students. It is surprising to find the university administrators with such low ratings. A possible explanation is that they were not visible to our case writers, who usually interviewed persons directly involved in projects.

From our sketchy information, university and college presidents to some extent did exert influence, especially in determining utilization strategies. However, their primary activity as seen in our analyses was to discuss their inter-organizational arrangements without much direct effect, since the structures in which the pairings operated were more or less fixed by other forces rather than by rational policy choice on the presidents' part.

What transpired in the critical interaction among university coordinators and the district superintendents? The ratings by the case interviewers and writers indicate that for the Harris University Coordinator, and her counterpart District Superintendent there was a high degree of informal contact and ready mutual access which facilitated the exchange of craft experience to the benefit of the pairing. The implication is that these two developed a relationship featuring a high degree of trust in strategizing and in each other's utilization craft knowledge. They also informally exchanged knowledge about educational processes and "a large amount" of educational situational material. This is a pattern where two people from different organizational frameworks send and receive utilization knowledge with high effects on each other and on the inter-organizational network they manage. There is also evidence of high effectiveness in transmitting education situational knowledge. Which comes first or is a determinant of the other is not determinable. We hypothesize a sequence in which craft knowledge flow develops a relationship in which the educational knowledge can later be exchanged.

Ratings by the case writer of the presence, effects and role context of the knowledge flow between Harris University Coordinator (UC) and the District Superintendent (DS) are as follows, (4=large amount, 0=none or none observed):

Harris University

	Educational Situational*		Educational Craft*		Educational Research		Utilization Situational*		Utilization Craft*		Utilization Research	
	UC	DS	UC	DS	UC	DS	UC	DS	UC	DS	UC	DS
Amount present	3	4	1	2	3	2	3	4	4	4	2	2
Effect	4	4	1	-	3	2	3	4	3	4	2	3
Role/ Interpersonal Context	4	4	3	-	3	3	3	4	4	4	3	3

* Sub categories of experience based knowledge

The Dunfey University Coordinator acted more informally towards the District Superintendent than the latter displayed in his behavior towards the Coordinator, according to the case writer. The rater does not see much effect in all of the knowledge exchanges. The ratings show more knowledge of educational processes being exchanged than utilization knowledge especially on a craft basis.

Dunfey University

	Educational Situational*		Educational Craft*		Educational Research		Utilization Situational*		Utilization Craft*		Utilizati Research	
	UC	DS	UC	DS	UC	DS	UC	DS	UC	DS	UC	DS
Amount present	3	3	3	3	2	1	3	3	2	2	1	0
Effect	3	3	3	3	3	1	2	3	3	2	2	0
Role/ Interpersonal Context	4	3	4	3	4	3	4	3	4	3	4	0

* Sub categories of experience based knowledge

The Massachusetts College field worker rated conservatively across the board, producing very few high scores. With this in mind, the table relative to the Coordinator from the College on almost all dimensions for which the rater provided any data. The roles were rated as formal "differentiated colleagueship". We infer that the flow (transfer/exchange) of utilization situational knowledge of the situation and utilization craft knowledge were formal. The impact of the Superintendent is apparent. We infer that when the Superintendent provided knowledge, it was taken seriously and had more effect than knowledge offered by the College Coordinator.

Massachusetts College

	Educational Situational*		Educational Craft*		Educational Research		Utilization Situational*		Utilization Craft*		Utilization Research	
	UC	DS	UC	DS	UC	DS	UC	DS	UC	DS	UC	DS
Amount present	0	1	0	1	0	0	3	3	2	3	0	0
Effect	0	3	0	3	0	0	3	4	2	3	0	0
Role/ Interpersonal Context	0	2	0	2	0	0	2	2	2	2	0	0

* Sub categories of experience based knowledge

Do the interactions among persons differ according to what they are working on? We compared the basic skills and the multicultural projects in the three cases. Overall, project content does not show major differences in the ratings. The university coordinators and district superintendents do not act differently in the basic skills and multicultural projects, according to the ratings. The Dunfey ratings show a higher level of activity overall than the other two pairings. We infer that this reflects the undoubted energy and commitment of the Dunfey Coordinator, as well as the tendency of the Dunfey fieldworker to perceive more activity in the projects he observed.

If there are differences according to the problem and content of project activities, they should show up in the ratings of instructional staff and the university faculty involved in the projects. First, it should be noted the faculty for the two projects are completely different persons. Second, in the judgment of the raters, neither project showed a high amount of knowledge exchange. The ratings were "a little" or "a lot", with the middle category of "some" occurring also.

Mutuality of craft knowledge flow is clearly present in both projects. That is, the ratings of knowledge exchange for the University faculty are about the same as the ratings for the instructional staff for education craft knowledge and (to a lesser extent) for the utilization craft knowledge. We infer that the University faculty engaged in the exchange of craft knowledge with the teachers in the schools, who also had information of the same type to share.

Inspection of the ratings in the two basic skills and multi-cultural curriculum projects shows low activity by the University Coordinator and the District Superintendent. Dunfey's Coordinator and District Superintendent received many "lot, goes beyond formal role" ratings in utilization craft knowledge and utilization situational knowledge areas. These suggest concern by the District Superintendent about the basic reading skills project and mutual interest and good working relationships with the Coordinator in the multicultural project.

Analysis of the data on educational knowledge flow in the two University cases shows University faculty transmitting educational research knowledge and the teachers sending educational situational knowledge.

Discussion of the medium of knowledge flow

Although we tried to measure the medium of knowledge flow, we do not show tables of our findings. Two things became apparent when we analyzed this data. First, the medium overwhelmingly used, according to the ratings, was verbal, as opposed to demonstrations and packages or some combination of all three. Second, only one rater appeared to be able to discriminate among our different categories and use all of them. Another

interpretation of his much more diversified ratings of media is that at Harris more channels of communication were used. This is possible, but not likely.

The knowledge used in the Pairings was mostly situational knowledge, ranging from the ways in which the city-wide school system operated, to the relationship of a principal and the teachers, the parents and other citizens from and around a school. Larger issues, such as school closings, transfer and selection of personnel for a school, and the antics of city politicians responding to the issues of racism, busing, and the urban decay also drew the attention of those looking for ways to strengthen the capabilities of the schools to increase the effectiveness.

The cases suggest that the knowledge flow process may have been slightly associated with various factors involved with teaching and research at the university/college level. It appears, from the three cases in this study, that the more research oriented a university/college, or the greater its tradition of conducting research in schools, the more two-way methods of knowledge flow were used, and there was also a greater attempt at actual knowledge exchange. However, the method most favored by all the universities/colleges in the three Pairings as a form of knowledge flow appears to have been the lecture, workshop, or other forms traditionally associated with university/college settings. Upon examination, these appear to shape or inhibit knowledge exchange or two-way knowledge flow and favor transfer of knowledge and one-way knowledge flow.

c.) Process Dimensions and Inter-Organizational Behavior

The evidence gathered by subjecting the cases to a content analysis (Appendix A) confirms the effect and importance of the

various process dimensions in understanding the operations of the Inter-Organizational Processes. Furthermore, the data from the cases identifies the use of power - organizational authority, etc. - as an important element in inter-organizational arrangement, especially in the initial "start up" period. The question of power equity - the perception of the ability to influence decision making in inter-organizational processes - is not necessarily important to participants in the early stages of inter-organizational interaction. What is apparent is that in situations of low power equity, it is important to have an advocate or someone within the organization who is both influential and in a position of authority, and who uses their power to promote and create inter-organizational activities and martial participation within their own organization. Thus, the role and influence of powerful organizational advocates is prominent in the earlier history of each Pairing. As the Pairings develop, and the perception of power equity increases among participants, there is not as great a need to employ authority or power to support continuation of the program. However, there is an increased and continuing need for incentives and the perception of other benefits of participation.

Our earlier estimation of the importance of power per se seems to have been excessive, at least for the period studied in the history of the Pairings. Power of administrators and superintendents was fundamental in promoting and initiating school system participation in the Pairings. Furthermore, they played an important role in shaping and directing the focus of Pairing activities in their schools and districts. The same appears true of the universities/colleges. The presence of a

powerful supporter or advocate determined initial levels of participation and support for the Pairing Concept within the university/college community.

> The University Administrator most influential in providing support for the Pairing Office within the University was the President. In addition to establishing the Office centrally as previously described, the President encouraged all University departments, both academic and support services, to focus cost-free programs in the schools with which the University was paired (e.g., student teacher placement internships, use of facilities, hospitality for meetings, etc.

After power, the development of trust and understanding were important to the promotion and expansion of further inter-organizational activities. The cases show that trust and understanding develop initially at the interpersonal level, and are greatly enhanced by the presence of some sense of shared history or previous cooperation.

> ...the Superintendent had a strong and positive relationship with the University Coordinator, stemming, in part, from collaborative work they had done prior to the Pairing. When he was superintendent of the old District B he had requested the University to provide voluntary, on-site tutoring and guidance services in one of his schools.
>
> The meetings were initiated by Joe Payne, who was the new Chairman of the High School Physical Education Department and previously responsible for scheduling school basketball practice sessions at Dunfey. They were an informal outgrowth of his continuing meetings with Ken Hurd. Payne requested consultation from Hurd and his staff regarding the most effective use of the prospective Henry Reid facilities.
>
> ...Grace Jones, the District Superintendent, initiated plans to develop an elementary-level math program using Chapter 636 funds. ...Mrs. Jones had been trained as a math teacher and several years ago, before she assumed her present administrative position, had participated in workshops at the Harvard Graduate School of Education, where she met Susan Tile, now a Massachusetts College faculty member. When Mrs. Jones decided that pairing funds should be used for math assistance, an idea

> also endorsed by the elementary school principlas, she asked John Powers, the College Coordinator, to include Professor Tile in the project.

Organizationally, this is best illustrated by the Massachusetts College, District C Case. As participants and their organizations advance through the various steps of learning described above, they share a common experience and acquire knowledge of the inter-organizational system, a form of situational knowledge that seems strongly associated with the growth of trust and understanding among participants in the Pairings.

The hypothesis of the analytic framework appears to be supported by the cross-case data. The process dimensions provide an important cluster of aperceptive variables which identify and support varying stages and levels of inter-organizational behavior. These "dimensions" or variables are not only sensitive to processes, but also to the presence of outcomes and the effects of structure. This is particularly true with regard to the levels of stress and uncertainty involved in the inter-organizational arrangements. A large amount of the Pairings' activities were directed toward establishing a firm, predictable basis for inter-organizational activities, and with seeing various features of the immediate, relevant inter-organizational environment.

> The other major activity of this period was the expansion of informal contacts by both the School Liaison and the University Liaison. The partners were conscious that only a small percentage of teachers and University faculty had participated in the summer workshop, so a deliberate attempt was made to seek out additional individuals and groups (e.g., departments) to elicit their involvement or at least their support. 'Doing favors' was the dominant style, and 'other services,' outside the formal structure used for proposal development, was the dominant delivery system.
>
> ...the participants were initially uncertain of their partners' intentions, strengths, and weaknesses, as well as their abilities to maintain their own organization's interest and commitment.

With the passage of time, evidence does indicate that the process dimensions would improve, especially when the Pairing activity was able to generate desired outcomes or meet short-range tangible goals. While improved perceptions along these dimensions did not necessarily promote attempts at collaboration, they did reinforce and foster increased interaction among inter-organizational participants.

> As a result of the Pairing relationship, District C administrators and teachers feel free to call on the College Coordinator or individual faculty members with whom they have worked for services not specified in the yearly proposal.

The association or relationship between the inter-organizational processes and the process dimensions may best be seen in the way in which one of the Pairing arrangements changes from one stage or level to another. The cases indicate that there were several ways in which the Pairings transformed, either upward or downward, from stage to stage and level to level. The most prevalent mechanism behind such a change appears to have been the ability of the Pairing activity to fulfill the initial expectations of the participants or the project's own short-term goals. If expectations (positive) and/or goals were met, the project participants generally gained confidence, enthusiasm, and felt that continued interaction was worthwhile. Thereby, the processes advanced upward. If their expectations were not met and/or the activity failed to generate outcomes, participants assumed a negative or guarded attitude toward further interaction. The processes moved downward and future activities proved difficult to justify or sustain.

Other indicators of inter-organizational processes stage transition were: 1) the amount of predictability and certainty that the activity was capable of generating--this, as shall be discussed below, had a profound influence on the selection of short-term focused projects;

2) the presence of certain combinations of roles in an activity or project also had a bearing on moving the processes from stage to stage (see role analysis below). If certain critical participants were in possession of certain personal qualities and organizational skills, process transformation (advancement) occurred. If there was a lack of such individuals, there is no evidence of advancement; 3) the cases show that funding (636 revenues, etc.) has an important ability to sustain an interaction or initiate new arrangements, but there is no data to suggest that funding, in itself, will necessarily advance the inter-organizational processes.

> ...I suspect that if Judge Garrity had matched the schools with some educational consulting firm that didn't use 636 or issue credits, they might have had more exciting and more productive results quicker...
>
> ...It just means that so much of that developmental work of building those non-cost resources, which is the way the Pairing is going to continue once the 636 money is gone, gets diverted to...the ad hoc immediate one-on-one things, and then you don't do the work that would make this a permanent and highly interactive relationship.

d.) The Hierarchy of Needs and Resources

An examination of the three case studies is enhanced by the inclusion of a second series of lenses or filters, a hierarchy of needs and resources. This component is especially important when considering questions regarding inter-organizational arrangements between differing systems such as universities/colleges and public schools. The hierarchy of needs and resources that pertains to one system represents the apparent and subtle organizational priorities, values, demands and supplies which are brought into the inter-organizational setting. In the case of the Boston Public Schools, the hierarchy of needs contains demands for classroom supplies at the most fundamental end, and extends to the need for assistance in developing curricula and in providing direct services to students through tutorials,

etc. on the other end. Its resources, in this case, are the system of incentives, opportunities, and attractions that dealing with the Public Schools offers to other organizations. Simply, it is the School System's capacity to meet or fulfill other organizations' needs hierarchies.

Likewise, in the case of universities and colleges, the hierarchy of needs represents those systems' priorities, values, and demands (needs). It is the need to find research sites, provide practicums or field experiences for students, place graduates, and satisfy or shape public expectations. The university/college hierarchy of resources represents not only its capacity to meet or fulfill the needs of other organizations, but in these particular cases, its tendency to employ certain resources, technical modes, and solutions to other organizations' problems. It is important to include this second interpretation since the cases reveal the university's/college's predisposition to employ a certain hierarchy of resources until they were in possession of sufficient knowledge of the school system's situation and needs to offer more relevant or acceptable forms of assistance.

At the level of the individual within each participating organization, the hierarchy of needs/resources translated into a motivational system. This is to distinguish it from an incentive system which consists of various rewards created by the inter-organizational system, and power/authority structures operating in and outside of their own organization. The various needs and resources individuals had within their own organization, motivate them to seek aid or give assistance through the various activities of the Pairing. The cases show that "voluntary" participating in the Pairings activity was limited to some particular need or motive on the part of teachers and university/college faculty alike. Initially power, the use of authority and sanction, brought teachers into many of the Pairings' early projects.

Later, the awareness of needs or the desire to acquire technical skills were cited as primary reasons for participation in the project. Similarly, the desire to bring certain resources and perspectives to the public schools motivated university and college faculty to join in the Pairing, as was the case with the Harris-Barry multicultural program or the Dunfey-District B reading program.

The Hierarchy of Needs and Resources, perhaps more than the environmental and historic filters, seems to influence the substance and method of inter-organizational processes. This appears to be particularly important with regard to the knowledge flow process and the generation of

> It was assumed from the beginning by all that the school and, to the extent possible, the District's parents would establish Pairing priorities that the University would help address. The first year was characterized by agenda-driven meetings in which University personnel responded to school requests with increasing specificity. According to most participants' recollections, the major block was lack of time...Participants felt a great sense of accomplishment when their first proposal for Pairing activities received relatively quick approval from the central administration.

utilization knowledge. Furthermore, it appears that an understanding of this relationship (influence) is important to an understanding of how successful projects function in a pairing (see c., p. 121).

The Importance of Hierarchy Compatability in Inter-organizational Arrangements: The Rule of the Least Common Denominator

Two observations seem supported by the case data and the analysis of activities undertaken by the Pairings. First, the function of an organization's hierarchy of needs/rescourses appears to be to focus activities in these inter-organizational arrangements on areas of minimum risk to, and highest immediate need satisfaction for individual participants. This appears to apply to both universities/colleges and the Public Schools. The difficulty Harris experienced in attempting to pursue long-term goals ran into difficulty

because it did not take this factor into account. School people needed to perceive short-term satisfaction of their needs and expectations.

Second, hierarchies of needs and resources may tend to differ from one organization to another. If these hierarchies are unequal, the cases indicate that they must at least contain elements (needs and resources) which are or can be complementary. If this compatibility is not addressed or discovered, the projects that are undertaken will tend to be of short duration and have low effectiveness. An appreciation or understanding of this feature seemed to enhance a Pairing activity's ability to meet the needs of participants and generate outcomes that were considered worthwhile. It was possible for there to be a coincidental matching of these needs and resources, as was the case with the facilities at Dunfey and Henry Reid High School. However, this was not the general rule.

For the most part, this matching of needs/resource hierarchies occurred in one of two ways: 1) through an individual (University/College) faculty member's having sufficient knowledge, experience or sensitivity to the school system's needs to provide appropriate and complementary resources, or through a relationship between a school teacher and faculty member which accomplished the same thing; or 2) through the knowledge flow process, wherein school teachers and University/College faculty would exchange bits of information and situational knowledge which would result in the matching or partial matching of resources of the Universities/Colleges to the needs of schools. It was a process similar to negotiating in which the outcome was greatly dependent on the skill of the participants. Otherwise stated, it related to their possession of and facility with utilization knowledge. The Massachusetts State and Ingliss High School Math Program illustrates how complicated and protracted this process may be.

When negotiations occurred, the match was often made on an inter-organizational process level which would minimize exposure and risk for the

client system. This appeared to reflect the levels of uncertainty and stress involved in the interaction. The higher these levels, the lower the level of interaction and risk. We have labled this phenomenon the rule of the least common denominator. The less each system or the participants had in common (shared perceptions, needs expectations), the lower the level of interaction and the greater the need to share information about each other. If this need was met, progress. If not, the Dunfey-District B Reading Program or the early phase of the Massachusetts State Ingliss High School Math Lab Project serve to illustrate the point. As long as the participants of one system had anxiety, fears, or misunderstandings concerning the other, or did not possess appropriate situational knowledge of 1) the other organization, and/or 2) the interactive setting, the rule would continue to apply and activities and outcomes would tend to be less than successful.

> ...this (Student Assistance Program) is the most likely project for the College and the District to have initiated during the early stage of the collaboration. School personnel, suddenly asked to specify how Massachusetts College might assist them, would immediately think of the College's largest resources--students. Also, this project probably represented the least threatening form in which both sides could fulfill the Court's mandate. The idea of College students working in the public schools was clearly not an innovation; it is a time-honored practice for education majors to work in the schools.

The rule of the least common denominator also means that interaction will tend to focus on the most pressing needs of the client system, in this case the Boston Public Schools. A review of the cases indicates that there was little stated need for research, or research presented as such, in the schools. It appears that the formal use or application of research is more a part of University/College, and research-affiliated agency's hierarchies of needs/resources. There is also little evidence to show that classroom

supplies were in great demand by schools, at least for the time period of the study. As the cases and activity analysis indicates, there was substantial demand for equipment and facilities on the part of the schools. (These needs were often met and tended to work toward the furtherance of the inter-organizational arrangements as long as the need/resource match remained.) Additionally, there was a high demand for "realistic technical and curricular assistances."

> From the beginning of the course, teachers expressed doubt about its relevance to their needs and their situations...Most taught reading. They felt that the content was too general to be applied to their particular circumstances...in discerning the elementary math curriculum developed by Susan Tile, teachers praised it for being 'realistic'.

Again, the ability of a University/College to supply these resources in an appropriate and sensitive manner determined whether or not the needs of the school people would be satisfied by the resources a University/College had to offer.

There was a great demand for personnel and direct assistance on the part of the schools. This demand was partially due to needs, expectations and incentives. Here, however, the needs of the Universities/Colleges to place students, etc., readily matched the needs of the public schools. The schools needed aides and tutors, and had teacher supervisors and students who were that system's resources. Similarly, the Universities/Colleges had an abundance of student aides, graduate tutors, and those seeking field experience, and had a need for supervisors of their placements and sites for practice. This blending of needs and resources illustrates how two systems are drawn together into a natural inter-organizational arrangement. However, the cases also indicate that personnel exchange also contributed to the further success or problems of a Pairing.

> For example, one professor involved in the development of the High School Reading Laboratory said that he learned a great deal from results of the diagnostic test. He had been appalled at the results and he observed that the teachers were equally upset. It became clear that high school teachers could not be blamed for students' low achievement at entrance to high school. This professor and others became sympathetic to the plight of the teachers who faced overwhelming problems with little material or human resources. Furthermore, professors began to perceive that teachers were working within an unwieldy and unresponsive bureaucracy.
>
> Ms. Marthera Pritchard, a faculty leader, stated: I think throughout the school the basic philosophy is that student teachers are more work. ...(I)nitially the problem with Harris University was that on the teacher level there was not a great deal of enthusiasm about taking student teachers. They'd had problems with them in the past.

When individuals went from their own organization into another, a certain amount of knowledge flow took place. Usually this was a one-way transfer of certain types of experience based knowledge. The teacher attending a University/College class would get information, the university student working as an aide in a public school would gain situational knowledge about that school. In projects which required university faculty to actively work in the schools, this experience and exposure generally increased their knowledge of schools and, if they persisted, it permitted them to become more effective consultants and knowledge utilizers in their particular project.

> Professor Tile's teaching experience at the elementary and secondary levels, as well as her supervision of student teachers at Massachusetts College, enabled her to develop excellent rapport with the teachers. She comments: 'The advantage I have is that I was a teacher. I've worked in classrooms. I know what you feel like when you get out at three o'clock after teaching all day.'
>
> ...her strategy has been to signify her commitment to the school by means of her continued presence within the Department and thus to win, however slowly, the good will of the teachers. 'I think that because of the fact that

> I am there, they talk about math, they talk about doing things. I have to set an example by doing more work than any of them (is) doing, so that they'll recognize that they can do work, too, and things will happen accordingly.'

e. Outcomes

The question of how the inter-organizational arrangements, as represented by the Boston Pairings, influenced knowledge use for the improvement of educational practice is dealt with in the next section of this report, and in Appendix B. Here, we consider briefly the types of outcomes generated by the Pairings. If we recall that the primary purpose of the Pairings, as stated by the Court, was to

> ...support, assist, and participate in the development of educational excellence within and among the public schools of Boston...to share in the direction and development of curriculum and instruction under the Court-sanctioned contracts with the School Department...

then it is clear that, even given the context of the Court's action--racial equity and increasing access to socio-economic and racially disadvantaged populations, the primary focus of the Pairings was improved practice, or the improvement of present programs within the schools.

By and large, the analysis of the cases indicates that the Court's mandate for educational excellence did translate into improving existing programs as the main objective and major outcome of the Pairings. The tone and perspective of this report may lead the reader to conclude that the Pairings were Inter-organizational Arrangements that failed. Far from it. Given the contextual and structural constraints of a wary environment, limited resources, mandated intervention, and lack of coordination of the implementation by the very individuals who planned it, the Pairings managed to accomplish a great deal. Indeed, they were very capable of accomplishing positive results and, considering the circumstances and pressures, were a

qualified success. An analysis of the cases indicates a great deal of evidence to support the assertion that the Pairings, in most cases, serve to improve present programs and address issues of improving basic learning skills among the strudents in the participating schools. Again, the record on this is stronger at the elementary school level than at the high school level. It is nonetheless there. (See Appendix A, p. 170.)

Although the cases show some evidence of attempts to extend and expand present programs, and even to foster the creation of new programs, as in the multicultural program in District C, or the Reading Program in District B, these data do not appear as often or provide as compelling an argument as do the data for the improvement of ongoing programs. Furthermore, there is little evidence in the three cases of efforts focused on increasing access for socio-economic or racial minorities. The same is true regarding the creation of genuinely new programs whose expressed purpose is integration or desegregation. The amjority of instances in the cases where increased education achievement is mentioned closely tie these efforts into improving present, ongoing programs.

There is little data available in the cases to provide a firm and comprehensive basis with which to conduct an evaluation of the cost-effectiveness of the Pairings and their respective projects. What data is available, in general, shows a high cost-to-effectiveness ratio, and suggests that the majority of those projects examined were expensive, if measured solely by their outcomes. The case of the Dunfey-District B student paper suggests that some University/College-provided services may have been more costly than similar services available in the open, commercial market. The structure of the Pairings did make more cost-effective decisions more difficult in some cases.

In examining the cases for evidence of new structures arising from the Pairing arrangements, the creation of a federally funded Teacher Center in District C stands out as a major achievement. It even manages to arouse the interest of the Regional R & D Center. The Harris-District A Consortium was not a similarly created 'new structure' since it was established prior to the inception of that Pairing, and only became attached to that particular effort, eventually supplanting the Pairing structure in that one case. Most of the new structures or substructures established in the schools, were organized around the institution of new or improved curricula or special interest programs. These particular programs appear to have been closely associated with the interests and objectives of various influential and important administrative participants, especially District Superintendents, in each Pairing.

The three case studies were closely examined for evidence of leveraging--that is, the use of, or contributions of, past accomplishment of the Pairings to generate improved school system capacity for self-improvement, or precipitate expanded investment and participation in the Pairing Program. If one were to consider the increase of 636 funding (see Figure 1, p. 10) as a result of learning about the inter-organizational system rather than evidence of leveraging, then only three examples come to mind: the efforts of the Harris Consortium to coordinate and expand the impact of that Pairing within District A; and the acquisition of NSF/ESAA funds and the creation of a Teacher Center, both occurring in the Massachusetts State/District C Pairing. The first example, the Harris Consortium, attempted to give a general long-range direction and focus to the various, scattered projects occurring under the Pairing. The fact that the Consortium was designed to serve Harris' internal needs and purposes, and the problems that resulted from that structure's inability

to effectively address differing time perceptions and need expectations of the participating organizations, seemed to limit/minimize that body's ability to leverage either results or investments.

The case of the District C Teacher Center, on the other hand, provides an example of how the Pairing served to bring together school system needs, ideas that had been circulating in the interorganizational system, and the resources and capabilities of the college pairing partner to create a new structure within the interorganizational system which could address all aspects of leveraging: strengthen the interorganizational arrangement; provide a structure to increase participation and extend/expand school system capacity for self-generated improvement; and precipitate new or increased levels of investment of personnel and funds. A close reading of this part of the Massachusetts State/District C Case Study is recommended. (See Massachusetts College Case, Project 5: Other Pairing Activites.)

It must be asserted again, that the objective of the Pairings was to improve educational practice, not to specifically promote desegregation or create interorganizational arrangements for the expressed purpose of knowledge dissemination or knowledge use. The extent to which these arrangements did promote the latter is discussed in Section V and Appendix B. Had they been expressly created for the promotion of desegregation, the general environment and sensitivity to this issue would have resulted in very different cases and activities. They did generate results which indicate that they were capable of, and in many cases did, improve present programs. The problem with assessing their impact of student performance and achievement is that the time constraints of any study, even one with a five-year range, and especially one which is highly qualitative in focus, makes it difficult to gather data and impressions which would provide support for such findings.

In terms of assessing what participants learned through their experience in their arrangements, the problem is, likewise, complex and difuse.

f. The Intersystems Model and the Function of Roles: An Analysis

An application of the intersystems model to the three case studies highlights the need and usefulness of providing a brief analysis of the various role-types involved in their interorganizational arrangements. The Boston Pairings cases reveal that there are critical individual characteristics and elements involved in the creation and implementation of successful interorganizational activities, particularly those concerned with the transfer or exchange of information (knowledge), and its use for the improvement of educational practice. In addition, a cross-case analysis reveals that the individual characteristics of participation in these activities can be grouped into role-types. These types vary in composition and importance depending on 1) the stage or level of the interorganizational processes and dimensions, and 2) critical time factors. As explained above (see Section II, p. 50), we have identified the following role-types operating in these Pairings: advocates, brokers, clients, gatekeepers, linkers, participants and regulators. Interestingly, the ability of an interorganizational arrangement to cause a shift in individuals' roles appears to be strongly associated with its capacity to succeed or fail. This transition is particularly critical with regard to moving gatekeepers to participants to linkers, linkers to advocates and visa versa.

A brief reiteration of the intersystems model in terms of roles might be helpful at this time. The Pairings structure may be seen as the result of the action of societal regulators: the Court, experts and masters, who intervened in a dispute among advocates (both sides) and gatekeepers

(School Committee et al). The Pairings were designed by regulators and advocates not to remedy the dispute per se, but to assure the quality of education to be obtained by the remedy, i.e. an excellent (Pairings-Phase II), integrated (Phase I) Boston Public School System. The structures designed to facilitate the Pairings brought together advocates (from all sides), gatekeepers (school and community interests), participants, clients, and linkers, and created various boards (regulators and brokers). In addition, exisiting bureaucratic structures were enjoined to provide funding (BEEO). These structures were composed of regulators and brokers. The participating organizations and sub-systems, Universities/Colleges and schools, contained the full array of role-types, from advocates to participants. With the exception of the Court itself, some regulators and advocates such as the planners and masters, withdrew from active involvement in the activities and events of these inter-organizational arrangements almost immediately after they had been 'imposed' on the somewhat reluctant public school system.

The environment and history surrounding these arrangements was mixed. Ambiguity and uncertainty concerning what these inter-organizational arrangements were about put people on their guard, especially in the public schools, thus creating gatekeepers. Furthermore, the dispute which had precipitated the formulation of the Pairing scheme had electrified the environment and evolved advocates on all sides. The method by which the Court had acted also caused those with resources and influence to weigh the extent to which their organizations might become involved--therefore each organization had brokers as well as gatekeepers. This was particularly true of the Universities/ Colleges and their presidents, who, with few exceptions (Dunfey being one), were cautious and less than enthusiastic in responding to the Court's "request" for assistance, and School Administrators who, having no part in

planning the Pairings, wanted to protect their system. Historically, with a few notable exceptions (Massachusetts State College), the Boston Public Schools have been removed from the City's institutions of higher education, and what interaction has occurred, especially around supervising teachers in university teacher training programs, has left many school teachers wondering.

> The staff was especially unenthusiastic about University students because of a recent change in University policy that eliminated tuition voucher stipends for supervising teachers, and because of unspecified 'bad' experiences with students (student teachers) and supervisors.

That is not to say that there was no positive history of interaction, especially at the individual level. Several University/College faculty had come from careers in the public schools or had worked closely with individual school teachers either as mentors, professors or consultants. Such experiences and associations resulted in the existence of many important linkers (individuals within Universities/Colleges and schools) or strong linking relationships (between two or more individuals in both organizations).

The Pairings were designed to help public school students (clients); however, the vast majority of University/College faculty and public school teachers and some students were observers and only occasionally participants in the Pairing program. To the extent that they were wary or skeptical of the intent of Pairing or programs, they could be considered gatekeepers. Indeed, given the 'loosely coupled' nature of schools and universities and colleges (Myers and Rowan, 1978; Corwin, 1975; Weick, 1976) professors and teachers are ultimately gatekeepers concerning access to the locus of practice--their classroom or lab, etc. Gatekeepers are effective under

situations of low trust and understanding, especially if they have access to critical "entry" or control points in an organization. This makes the administrator's position particularly effective in gatekeeping, especially when consideraing schools' organizational characteristics. To the extent that they had control of resources, relevant to the Pairing's interest, they could also be considered brokers. School District and University/ College coordinators were either advocates, brokers or linkers depending on the function they performed. When trying to recruit participants or elicit organizational support, coordinators were advocates. When they would negotiate with members of other organizations on behalf of their own institution, they were brokers. In promoting Pairing projects with people in other organizations and bringing resources and needs together (being neutral about the appropriateness of the match), they were linkers.

The objective of a successful inter-organizational arrangement concerned with knowledge use, in terms of impact on role types, is the promotion of participation and the gradual development of participants to become linkers and advocates of new methods and forms of practice based on the most relevant and recent educational research. Likewise, this would require the generation of sympathetic regulators and supportive brokers, and a gradual decrease of organizational gatekeepers. Ultimately, there should be system-wide participation (at least in the user/client system - the Boston Public Schools), an increase in participation and advocacy at the new service provider system (University/College system), and a gradual blurring of the client/provider distinction.

g. <u>An Examination of the Activities and Inter-organizational Processes</u>

Involved in the various Pairing projects especially knowledge flow suggests the presence of at least five concepts associated with the function

of roles in implementing successful inter-organizational arrangements to provide improved educational practice through knowledge dissemination and use. These concepts are: Institutional (Power), Role Affiliation, Personal Characteristics, Critical Mass, and Entry and Transition.

Institutional (Power): Early in this study, we offered an hypothesis about the history of the Pairings being characterized by struggles for power. While this phenomenon was not so evident as our early speculations might have indicated, power as the influence and authority of key organizational actors, was important particularly in the early phases of the Pairings' development. In bringing each organization into interaction with another, every Pairing required that some organizational authority be exerted in that direction, be it from a dean of a School of Education within a large university, or a university president himself, or an individual of prestige, and a close personal associate of the college president. This was more apparent and necessary in the Boston Public Schools, where Community District Superintendents played a critical role in deciding level of participation and developing the focus and determining the direction that the Pairing would take within his/her district.

Once they determine the extent of organizational involvement and determine the focus (as brokers) their advocacy of such projects that interest them or their associates (District administration or coordinators, for example) is essential to the creation of an organizational climate which encorages participation. Indeed, these advocates must be in critical and influential positions within the organization in order to precipitate initial participation in the Pairings first early projects. This is especially true where there is risk, stress and uncertainty surrounding participation. Under these conditions, organizational leaders appear to have the ability to limit

or overcome the effects of risk and uncertainty by creating institutional supports and expectations, through their power and influence and behavior, which increase the likelihood of compliance and participation within their system. Under conditions of high risk or uncertainty this influence may be coercive and imply sanction - i.e. "Telling Behaviors".

Role Affiliation: The cases reveal an interesting phenomenon which we have called 'role affiliation' - it appears to operate as follows. When individuals from two or more organizations come together, their interaction seems to be more positive and successful if a common identity or perspective can be determined, discovered or generated. Our research finds that this common perspective or "affiliation" is particularly necessary for inter-organizational arrangements or events involving public school teachers, thus supporting Wolcott's findings (1977). Teachers must perceive their counterparts as more than sympathetic--they must be insiders. However, depending on a complex array of variables, this is not often possible or easy. Yet, we find that teachers, for a variety of reasons, hold not one, but multiple identities or roles. They are teachers, yes; but they may also be historians, mathematicians, naturalists or athletes as well. When individuals from the schools could associate with one of these alternate roles or identities, a more powerful and satisfactory interaction occurred. Thus, when the Dunfey-Reid Physical Education Program developed and grew, a factor which contributed to this project's success was the fact that people from the school and university related not as teachers, for that required too specific an understanding of complex and subtle issues. Instead, they related as athletes, and did so with great interest, enthusiasm and success.

Personal Characteristics: A review of the data from the various Pairings projects indicates that linkers, particularly those from the service/provider organization (University/College) must possess certain personal characteristics and/or skills in order to function effectively. An important characteristic as identified by the cases is a high degree of understanding of the situational context of the other organization. For the most part, this comes from historic or ongoing involvement with the other organization. Several individuals with limited exposure or prior experience as teachers in public schools did manage to acquire sufficient knowledge of their counterpart's jobs and setting, in a brief period of time, to function effectively and generate what were perceived to be 'successful' projects. This was due to their skill and sensitivity at employing supportive, empathetic behaviors and attitudes in their interaction. They were "sympathetic outsiders". The cases indicate that role empathy is an essential characteristic of successful linkers, especially in cases where there is a low level of power equity and high mistrust.

Third, the effective linking agent must be persistent and committed. The description and contrasts of the Ingliss High School and Elementary Math Assistant Project in the Massachusetts State College case provides an excellent illustration of the importance of this characteristic. Persistence is all the more important since there are so few incentives for prolonged involvement, especially in the absence of short-term successes or outcomes. Finally, the linker must be able to walk a fine line of multi-organizational affiliation. The cases suggest that linkers, by their very function and role, are often marginal to their own organization. If they cannot maintain the balance between their own organization and another they lose their effectiveness.

> After more than four years of trying, the University Coordinator became frustrated at the lack of meaningful impact in the High School. She sent a formal memo describing her feelings to the Headmaster, and requested his reaction. His response was to terminate formal relationships with the University.

When they become too involved in the issues and needs of the other organization, they lose credibility with their own, as was the case with Harris' coordinator. Linkers must be sensitive, experienced, persistent and flexible.

Critical Mass: The cases are useful in that they present a broad array of experiences and styles of pairing activities. While some projects dealt with several hundred clients and participants, some also dealt with as few as four or six. There is evidence of successful experiences at both ends of the project-size spectrum. However, if one of the objectives of these inter-organizational arrangements is to promote school-wide and ultimately district-wide improvement, then it is appropriate to focus on the question of the optimal level of participation. Herein, we noted that there was a phenomenon of critical mass at work in the more successful pairings. Not only mass-level of participation, but critical ratios of participant role-types. Projects did and should vary in size, depending on their purpose and design. However, at any level--department, school, multi-school, or district--there are sizes and role combinations which engender further participation.

In general, the inclusion of persons holding positions of leadership and authority is essential, no matter what size the project. It also appeared that smaller scale interactions were better than large scale activities, and consultants or resource people who behaved as linkers were better than advocates. Advocates tended to have equal success at increasing participation or increasing gatekeeper behavior depending on their approach. With the exception of influential, administrative advocates, linkers were more successful

at promoting interest and participation.

Although interactive settings with fewer participants (15 or less) per instructor or linker are to be preferred, the level of overall participation should be extensive and diverse. One-shot, small workshops had limited, even minimal effect. Further, the "trainer of trainers model" employed in the Dunfey Reading Project was poorly received because of its lack of careful presentation. Furthermore, participants did not possess sufficent comfort or prestige to act effectively as either linkers or advocates. A project might achieve broad and substantial impact by: attempting to develop interest (intensive) in the inter-organizational activity through carefully constructed workshops, discussions, or use of power--i.e., critical role/position combinations; and by promoting participation and involvement (extensive) in the activities until they can become self-sustaining--i.e., critical mass. The Harris-District A Reading Project, the Dunfey-Reid Physical Education Project, or the Massachusetts State Elementary Math Curriculum Project are three examples of this combined approach.

Entry and Transition: The cases suggest that the way in which organizations become involved in inter-organizational arrangements has a profound effect on the nature and substance of their operation. In this instance, participation was imposed from outside of the system. There was neither participation in the planning, nor preparation of the schools to undertake their role as "partners" in a "collaborative arrangement". The first activity of the Pairings, also mandated by BEEO requirements, was a District-Wide needs assessment. This was conducted in a different manner in each Pairing District. In some cases it was "quick and dirty", implemented with little sensitivity to school personnel's fears, needs or concerns. These created negative feelings and expectations among teachers and administrators. In other cases, they were done with attention to partici-

pation and sensitivity to the fears and questions of teachers. These created high hopes, positive attitudes and expectations among school people.

As we have indicated above, the use of administrative pressure, suasion, or 'telling' within an organization was an effective way to generate participation and overcome risk and uncertainty in the early stages of the Pairings history. However, as time passed these mechanisms tended to become dysfunctional. In fact, the use of 'telling' generated several instances of passive resistance. Often, teachers had a fatalistic, almost "conspiracy of the conquered" attitude. This can be seen in one Dunfey-District B Reading Program. While teachers appeared cooperative, their perceptions of the situation were different from their behavior and their "cooperation" was in fact "passivity". This also affected their ability or inability to accept roles as linkers of skills and information. They were expected to go from participants to intra-organizational linkers and hopefully, to advocates. They did not. More precisely, the experience of the program caused some of them to go from participants to gatekeepers.

In both systems the transition of individuals from gatekeepers to advocates or from advocates to gatekeepers, appears to hinge upon an interaction between the inter-organizational processes, and outcomes, and the presence of motivations and/or incentives. The cases provide evidence of a great deal of role transition taking place during the life of a particular project. For the most part, projects which resulted in participants' becoming linkers through careful attention to design and feedback in the schools themselves, were more effective than those projects which treated participants (teachers) as passive learners, as in a college lecture situation. There is some evidence that a project's capacity to transform individuals from participants into linkers or advocates was somehow related

to the importance accorded to the project by the administrative leadership, and the compatibility of the project's goals with the stated or accepted mission of the organization involved. More careful study is needed to detail how this process takes place in school-University/College arrangements.

h. The Problem of Change and the Consequences of Structure: Time, Feedback, and "Projectitis"*

In designing and imposing an elaborate and comprehensive series of structures upon the Boston Educational Community, the Court and its planners clearly hoped that their effect would be to change (improve) the Boston Public Schools. The schools did change; some of the consequences of change were anticipated, but some were not. The most significant change occurred, not as a result of the Pairings, but due to a combination of factors: demographic decline, changing racial-ethnic compositions and "white flight" to private and parochial schools. Table 1 indicates the nature and magnitude of this decline/shift.

As of this writing the impact of the Court's action in this shift is less clear and still a matter of discussion. However, these data are presented to indicate an important element in the general setting.

The Pairings did have their effects. Some were outstanding, many had limited impact, and some had little or no noticeable effect. These inter-organizational arrangements brought significant quantities of resouces--human, technical, fiscal, and otherwise--into the Boston Public Schools.

*"Projectitis" is a word coined by one of the University/College coordinators and used in discussions with the authors to describe the tendency of the Pairings to focus on short-term, scattered and fragmented activities--a situation he felt was as a consequence of 636 funding.

TABLE 1

Boston City-Wide Student Enrollments by Racial/Ethnic Group, 1975 and 1980[a]

Grade Level	White		Black		Other Minority[b]		Total	
	1975	1980	1975	1980	1975	1980	1975	1980
K_1 + K_2	6,678	3,579	3,274	2,722	1,271	1,374	11,223	7,675
1-5	16,077	7,175	13,184	10,834	4,512	4,687	33,773	22,696
6-8	8,448	5,617	6,719	7,461	1,939	2,468	17,106	15,546
9-12	12,210	7,149	7,322	8,753	1,838	2,687	21,370	18,589
13+	880	497	237	313	324	304	1,441	1,114
K-13+ Total	44,293	24,017	30,736	30,083	9,884	11,520	84,913	65,620
Percentage	52	37	36	46	12	17	100	100

[a]Data filed with the court by the Boston School Department on April 10, 1975, included any student enrolled anywhere in the system and attending one or more days since September 1974. (Later, we found that about 5,000 had attended for only two to five days. Still later we found that a backlog of 3,000 discharged students was included.) Data for April 12, 1980, was prepared by the Department of Implementation, Boston Public Schools.

[b]Includes Hispanic-Americans (73%), Asian-Americans (25%), and Native Americans (2%).

The thousands of individuals and millions of dollars involved in the Pairing program over the five year period could not help but make some difference on the schools and the various clients and participants. Indeed, a constant theme encountered by the case writers in their interviews of University/College participants was how much they had learned about the public schools and the difficulties facing those who work within them. Similarly, the cross-project analyses of each case study discuss how much public school participants learned about the organization, personnel and resources of their University/College partners. Furthermore, public school and University/College students received assistance, instruction, access to experiences and contact with individuals which might not have occurred without the Pairings and their various projects.

Yet, as time passed, it became increasingly apparent that the visions of the original planners and experts would not be realized. The Pairings

provided new opportunities and experiences for individuals in the inter-organizational system, but they failed to create new, permanent relationships and institutions to foster cooperation and collaboration between the Boston Public Schools and the city's universities and colleges.

> There were two features of the early days which affected the Collaborative negatively for some time after: a focus on 'projects', which were relatively uncoordinated with each other and with a true master plan, and a partial role for the University as a vendor of services. A style of operation quickly evolved in which teachers produced lists of problems and the University tried to respond to the lists.

The record is mixed, but in some districts, the program was totally discontinued, in some it became a source of contention between anxious school administrators and seemingly indifferent University/College people. In districts and at some school sites it became the focal point of a power struggle for control, where the school people took over the program and either changed the focus or used the funds for other projects that did not involve University/College personnel or resources.

In presenting this analysis, we fully appreciate the value of and impact achieved by the Pairings. Indeed, we hesitate to think of what might have happened without them. However, our study also raises these questions: Why didn't they go farther? Why weren't new collaborations instituted or institutionalized? Why were the Pairings efforts so scattered and seemingly uncoordinated? Why didn't they generate anticipated changes? Why were projects the preferred activity mode? Why did interest and participation in them, by both University/College and school people, decline? In part, the intersystems model was selected and developed to provide some answers to these questions.

It would be misleading and simplistic to identify any one factor as

responsible for the inability of the Pairings to create new entities, or the preference for and wide use of projects. As the conceptual model indicates, the inter-organizational system is complex, interactive, and dynamic. However, the cases indicate that this inter-organizational system achieved an equilibrium short of collaboration and cooperation (i.e. sharing), and like most systems was subjected to stasis or entropy over time. Looking at the system as a whole, what could, in part account for this? The problem of change in complex organizations is the subject of countless studies and interpretations. In inter-organizational networks, it is likely that the change issue becomes compounded. The inter-systems model, representing the socio-political network of the Boston Pairings, presents several elements and aspects which can provide a useful perspective for assessing the performance of these inter-organizational arrangements and the problem of change. These are structure, time and feedback.

As we have stated in presenting the conceptual framework of this cross-case analysis, the single most significant factor in explaining the functioning of the Boston Pairing, in our estimation, is structure. By structure, we are referring to not only the various mechanisms and arrangements mandated by the Court, or drawn from the organizational environment, but we include their characteristics and the processes involved in planning, placing and implementing these structures in the inter-organizational system. The fact that planners were separated from implementation, and that those who oversaw the process, the Court, did not or could not, provide a connection between the two, greatly affected the system's characteristics and the outcomes that the Pairings produced. Indeed, there was an over-reliance on structures to achieve the desired outcomes, and a lack of attention

to implementation and coordination. The manner in which the system was enacted, the Court's approach toward the Universities/Colleges and its attitude toward the schools, only served to reinforce the gap between those who created the system and those responsible for its operation.

Once the BEEO and 636 funds were introduced into the system, the level of complexity and ambiguity increased. The BEEO had not been established for the same purposes as the Pairings. Thus, there was a collision of intentions. There never was an attempt to reconcile or realign the policies of one to work with the other. The result was a patchwork of structures, requirements, regulations, and expectations, many of which evolved at cross purposes. This served to heighten the perceived level of uncertainty and ambiguity surrounding the inter-organizational system.

Here, the model indicates the importance of environment and history. Because of the antagonism surrounding the Court's actions, and the lack of experience with such issues, the Court found it necessary to circumvent the existing system. It set itself apart from the established structures and exercised power accordingly. This fostered the perception, by those involved in the Boston desegregation and Pairing programs, that the Court's actions were ultimate, fixed, and unalterable. This perception spread to those structures and arrangements mandated by Court order. The attitudes and investments of strong advocates on both sides of the issue only exacerbated the "untouchable" view. While fully appreciating the necessity of the Court's action, the cases are fraught with examples of the problems and consequences of "mandated change" in inter-organizational systems.

It is commonly accepted that an important aspect in the effective functioning of any system - organizational or physical - is that system's ability to generate, collect and use 'feedback'. Our model addresses this capacity.

Under ideal conditions, information and feedback will generate corrections and adaptations in direction, focus and ultimately structures, to assure optimal performance of the system. The cases suggest that little evidence of such feedback and flexibility in this inter-organizational system exists. Most information of this type was found at the inter-personal level, related to specific aspects of projects or activities and not to problems with the overall structures or design of the Pairing System itself. Those examples of feedback that are mentioned in the cases indicate two things: 1) feedback does precipitate changes in mechanism which facilitate and promote the effective functioning of the system.

> The facilitating structures in District C have been centralized, but the nature of the committees and the burden of the work have led to an alteration in the process of submitting proposals. Project proposals are first reviewed by the District Superintendent, who then passes them on to a District Screening Committee composed of CDAC representatives, teachers, and school and district administrators. In the first years of the Pairing, Massachusetts College submitted a very large number of proposals to this committee, which then selected only a few for submission to the state for funding. To eliminate this waste of effort, the District Superintendent after the second year redesigned the proposal screening process. Now, the process requires that project abstracts be jointly submitted, so that initiators from the College must find cooperating individuals in the District, and initiators from the District must find partners within the College. These abstracts are screened and only the initiators of the projects that the Committee intends to recommend for funding are asked to write full proposals. Thus, the District C decision-making structure took on a more streamlined form, one that has since been fairly successful.

2) the feedback process has to be appropriate to the interaction or it will be perceived as meaningless, useless, or "wired" by participants and the data generated will be misleading or useless in evaluating or improving the system's operation.

> ...the teachers would not express their negative opinions on the feedback form. Informally, they reported that course content was not appropriate to their circumstances, particularly that the degree of individualized and small group instruction advocated by the professor left little room for what they felt were the required aspects of instruction (e.g., standardized testing in reading, ascertaining students' reading levels, etc.). However, the teachers' formal evaluations of the course were very high. With few exceptions, teachers rated the course content and the course leader's presentation as 'good' to 'excellent'. The one aspect of the course that received less than positive feedback was 'participant's involvement'. ...there are several possible reasons for the difference between teachers' formal and informal feedback 1) the first is the recipient of the informal feedback; the 636 Facilitator, Barbara Dunn, who was perceived as a colleague and whom they perhaps hoped would exert her political influence to institute changes vs. the course instructor, who was perceived as an 'immovable object'. Also, 2) the teachers may have been unwilling to confront the authority of the course instructor, even anonymously, when they had so few answers to their difficulties themselves. The request for feedback at the end of each course session may have produced a halo effect through which the teachers felt more positive about what they had learned in the class but which was offset when they returned to their classrooms and encountered serious difficulties in application. Finally, the teachers may have felt that the formal feedback would concretize negative assessments not only of the course, but of the Pairing itself and that the repercussions might extend beyond their original intentions.

As the Pairings proceeded, and participants began to discover and give meaning to (define) the inter-organizational system, they did so without the expectation of influencing or questioning either the Court's structures or the BEEO's requirements and funding process. Soon, patterns of interaction, activity, and knowledge flow began to emerge which attempted to conform to, or work around, the Court's various structures, committees, and the BEEO regulations. With time, the system did reach an equilibrium which, conforming with the structural assumptions, made the schools the client/user system and Universities/Colleges the service/provider system. The traditional style of interaction between providers and users is, of course, supply and demand

or "selling".

If the pattern of inter-organizational interactions reflected a selling behavior, then the project can be seen as representing the activity pattern or mode of these Pairings. As we stated previously, projects became the unit of analysis in each case study, largely due to the fact that, at the time this study was undertaken, the project had become the established, functional expression of Boston School-University College-BEEO/636 System. "Projectitis" had taken hold of the system.

The project had its advantages and disadvantages. From the point of view of the participants and the perspective afforded by the inter-system model, the project or projectitis was a logical, and workable, consequence of the system as constituted. From the perspective of the intentions of the system's planners and the Court - the project was a consequence, to be sure, but an unanticipated consequence at that. A brief overview of the causes, characteristics, and consequences of the project provides a clue to its functional and dysfunctional nature.

Causes:

- Imposed, ambiguous, yet inflexible structure
- BEEO funding and evaluation requirements
- Perceptions of uncertainty and risk
- Needs of schools: "What to do Monday morning"
- Desire for short-term, tangible results
- Need to minimize exposure and responsibility
- Competition for limited but reliable resources

Characteristics:

- Short-term (1 year or less)
- Narrow, specific focus
- Variable Size and orientation

Consequences:

- Engaged small part of school/district in Pairing
- Satisfied perceived demands of Court mandate
- Captured additional resources for the school-University/College
- Scattered fragmented impact
- Disconnected and often uncoordinated
- Provided short-term outcomes for system and participants

In short, the project appeared to engage participants in a series of activities that seemed to satisfy the Court's mandate, conformed to BEEO/636 regulations, reflected the time focus of the 636 cycle, and secured additional resources for schools and Universities/Colleges. At the same time, the project assured limited intervention in the schools, and minimized risk, exposure and additional responsibilities for the participants. Project outcomes varied, but they were seldom coordinated or consolidated to promote district-wide impact or even school-wide change. The exception to this, of course, was the Harris-District A Pairing. Here, the Consortium attempted to coordinate the Pairing on multi-year, multi-school efforts. There, the Reading Program went far toward this end, but the broad approach of the Consortium proved too wide or abstract to engage strong school interest or address school personnel's needs, and it did not get the strong support or produce significantly more outcomes and results than did other Pairings.

IV. SUMMARY CONCLUSIONS, GUIDELINES, AND SUGGESTIONS FOR FUTURE RESEARCH

A. Introduction

In this section we begin with a summary of major conclusions about our outcome dimension--the nature and extent of knowledge flow/use for school improvement in the three Boston Pairings studied. We then summarize our major conclusions and characteristics of the inter-organizational arrangements (Pairings) associated with this outcome, and critical aspects of their setting. These factors are part of a conceptual model which we use to describe factors and conditions which affect knowledge use for school improvement in inter-organizational arrangements. Throughout we offer guidelines to practitioners engaged in similar collaborations, and we suggest areas of future research needed to achieve higher levels of knowledge flow/use through such arrangements.

B. Knowledge Flow/Use for School Improvement

In the Pairings many University/College, school, and community people came together around primarily discrete, small-scale projects. With a combination of state and local funding and other resources, with a combination of paid and contributed time, attention was focused primarily on school-defined needs (listed in order of historical occurrence)--expanded access to facilities and materials; added personnel for direct services to students; improved practices such as in curriculum and instruction; and (least occurring) enhancing the school's self-improvement capabilities.

In planning and implementing such projects, considerable time was spent by the University/College-school-community participants in talking together and separately about the problem, and ideas about improvement. In Figure 5

(p. 36) and related discussion we characterize these and other "inter-organizational processes" on four normative scales, each related to lower-to-higher levels of knowledge flow/use for school improvement. Using this model a major conclusion of the study is that the three Boston Pairings are governed primarily by their structural characteristics and setting, and have more-or-less stabilized at the mid-range in the model. At this mid-range, we find that:

- the predominant mode of knowledge flow/use is through verbal face-to-face interaction, with very little use of written materials, such as the available products of federal/state/private R & D programs and agencies;

- the predominant type of educational knowledge flow/use is situational knowledge first (47% - 53%), craft knowledge second (36% - 41%); and research knowledge (5% - 16%);

- knowledge flow/use by role found school (experience based) staff contributing mostly situational then craft knowledge, and University/College staff contributing mostly craft than research knowledge;

- the directionality of the knowledge flow/use was more often two-way exchange between University/College and school participants in the case of the most research-oriented University/College, and more one-way (University/College to schools) in the more service-oriented University/College;

- the content area of the knowledge flow/use (e.g., basic skills, physical education, multicultural) does not appear to affect either the mode, type, role, or directionality of knowledge flow/use;

- the level of need addressed does affect knowledge flow/use, with experience based and research based knowledge being used, respectively, concerning access to facilities and materials, added personnel for direct services to students, improved practices, and enhancing the school's self-improvement capacities; and

- the setting does affect knowledge flow/use, with school staff more tolerant of research based knowledge if presented by University/College

staff in workshops/seminars at the University/ College setting. At the school site, school staff expect (and use) more experience based knowledge, but resist research knowledge.

To varying degrees knowledge was used in the Pairings, and some school improvement was achieved. By locating these accomplishments and associated processes "at mid-range" in our model, we do not intend to denigrate their importance. Given the setting, the ambiguity of the Pairings, and the structural limits, the Pairing participants inched their way to mid-range from the very bottom of the model. In itself this steady progression is a major accomplishment. What the model suggests, however, is that future progress toward higher levels of knowledge flow/use is possible, but will require alterations in critical aspects of the entire apparatus.

High levels of knowledge flow/use would involve more extensive refinement and adaptation of federal/state/private R & D products to upgrade school practices, and to enhance the school's improvement capabilities. In the Pairings there is surprisingly little evidence of use of such R & D products; almost none, actually. With only one or two exceptions in our cases, the Pairing participants did not actively search for available R & D products, nor did the purveyors of such products try to disseminate their wares to the Pairing participants.

Available R & D products, if sought or disseminated, may not have applied exactly to many situations/needs in the Pairings. However, the predominance in the Pairings of locally developed, custom-tailored improvement activities derived through extensive discussion and negotiation was certainly labor intensive and therefore highly cost ineffective. Clearly there was not a parsimonious "leveraging" of scarce (and declining) resources. Furthermore, locally developed improvement activities were mostly short-lived,

and seldom disseminated to other classrooms, schools, or districts beyond their sites of origin.

The current arrest (equilibrium in the Pairings at this mid-range in our model) of localized knowledge flow/use is more-or-less "explained" by our conceptual model, which links structure, environment, and inter-organizational processes to the nature and extent of knowledge flow/use. A major assumption of the model, which certainly warrants future testing under more controlled conditions, is that higher levels of knowledge flow/use will follow: by making key structural changes in the inter-organizational arrangements; through more effective responsiveness to critical historic/environmental "filters" affecting the Pairings; and by altering the complexion of at least three types of inter-organizational processes toward more "true" collaboration and mutual exchange.

C. Effects of Structure

It cannot be over-emphasized that the Boston Pairings studied were mandated by Court-order, establishing a large, complex network of structures to promote involvements among not only the paired Universities/Colleges, schools and parent/citizen groups, but also a large "super-structure" as well (e.g., the Court, the Massachusetts Department of Education, State and Boston Chapter 636 Funding Administration, the Boston School Committee, the Boston Mayor's Office, and the President's Steering Committee.). In this context, the Pairing participants were charged to jointly plan and execute projects and activities which they felt were needed to upgrade the quality of education and enhance equity in Boston--an achievement viewed by the Court and its planners to be key to successful school desegregation over the long haul.

Armed with this global mandate, few procedural guidelines, nothing said explicitly about "knowledge use," and some prior histories of piecemeal collaboration, the Pairing participants worked their way over a five year period. They moved from stages of mutual suspicion and wariness to some cooperative planning, but mostly bargaining and trading. Initially, the Chapter 636 Funding of discrete, one-year projects provided structure and relative certainty within a highly ambiguous (unspecified) arrangement. Chapter 636 Funding required written proposals which were to include a needs assessment, objectives, activities and timetables, a detailed budget, and a budget rationale. Given such required specificity, initially wary and suspicious "partners" had a means to see that anything "slippery" would be spotted and blocked in advance. However, as time progressed and as the Pairing participants became more trustful, experienced, and involved, they were increasingly frustrated by the very structures which got them started. Their deepening understanding of what was needed, and their widening vision of the possibilities for school improvement, often went beyond the limits of the structure (i.e., fixed funding cycles; cumbersome administrative procedures; requirements to adhere to the initial project specifications, even when alterations proved necessary). Thus, from our cross-case analysis of the effects of structure on knowledge flow/use for school improvement, we conclude that higher-order functioning will require that:

- <u>those with power</u> to alter the structural arrangements and requirements must be involved in monitoring progress, and in periodically refining the apparatus, where warranted, over time:
- given assumptions of powerlessness which naturally develop in Pairing participants within an ambiguous court-mandated arrangement, participants tend to

lower their sights and adjust to structural limitations, rather than press for needed structural change;

- the key roles for setting direction and exerting influence in the Pairings toward higher-level functioning are powerful advocates and linkers, and these roles can be enacted by people in a variety of staff and administrative positions in the Pairings and their superstructures;

- the most critical positions in the Pairings for facilitating cooperative (and eventually collaborative) planning and action are University/College and school coordinators;

- year-long, terminal projects satisfy some needs for short-term outcomes, expected especially by school staff and parents/citizen groups;

- to satisfy the short-term needs of school staff and parent/citizen groups, short-term projects should be designed as part of long-termed programs for cumulative effect and higher-order functioning;

- overall, parent/community group involvement in the Boston Pairings was primarily ceremonial, despite many efforts to the contrary;

- a characteristic fragmentation ("loose coupling") of subunits in schools and Universities/Colleges requires frequent and multiple communications regarding Pairing projects and activities for their spread (leveraging) across subunits;

- the predominant type and focus of the University/College (i.e., research, teaching, service) affects the emphases of the Pairing projects and activities, and hence the nature and extent of knowledge flow/use for school improvement; and

- inadequate and inappropriate incentives (including money) for most participants have and continue to be a major barrier to project and activity involvement, and attention to knowledge flow/use.

These structural factors were inherent in the design of the Pairings at the outset. Most project participants simply assumed that since they were enmeshed in a Court-order, that they were forever set in stone. With

each group of participants assuming low power for themselves, few made any sustained effort to test where the apparatus could be altered in line with what experience and hindsight suggested. This led to a "rule of the least common denominator," in which participants adjusted their vision, down, to fit within the structural limits. Had the Court and its planners extended their role into long-term monitoring and evaluation of the effects of the structure which it created, needed refinements may have kept apace with the steady progression toward higher-order knowledge flow/use for school improvement achieved by the Pairing participants. Without that capacity the progression came to equilibrium (at mid-range in our model), as vision and effort gave way to the weight of what came to be more and more of a structural yoke.

D. Effects of History and Environment

Taken together the Court's desegregation plan and Pairing plan created a major upheaval for the Boston Public Schools and its constituent groups. At its worst it meant to some (the dreaded) forced busing and school system decentralization, with all the confusion and stress which such changes typically engender. To others it meant an opportunity to break set, to get out of the rut of segregation, inequity, and poor quality education. The Pairings could become a counter-foil to the perceived ills of desegregation, given the positive nature of their charge to upgrade education and promote equity.

However, many Boston staff resented what they saw in the plan as a slap-in-the-face; a strong suggestion of their incompetence and inertia. Many were proud of their prior efforts and accomplishments, and were profoundly insulted by this undertone of the Court's actions. Many University/College professors held long-standing stereotypes and biases against the Boston Public

Schools, and thus entered the Pairings with an air of condescention. These initial attitudes were conditioned by history and the new environment (i.e., desegregation, decentralization, the pairings), and the effects of such "filters" continue to influence the nature and extent of knowledge flow/use for school improvement in the Pairings. From our cross-case analysis, we conclude that:

- in the initial stages (1-2 years) of mandated inter-organizational arrangements which involve such major changes, participants will devote considerable time and energy vying for power and influence in an ambiguous environment, and will tend to engage in projects and activities with minimal risk (e.g.,access to facilities and materials);

- parental/community support for the Pairings will be very difficult to attain when the Pairings are an integral part of an emotionally charged, Court-ordered desegregation;

- the colleges/universities, especially, must avoid taking too much credit for the Pairings' achievement, as this will further antagonize school and community participants;

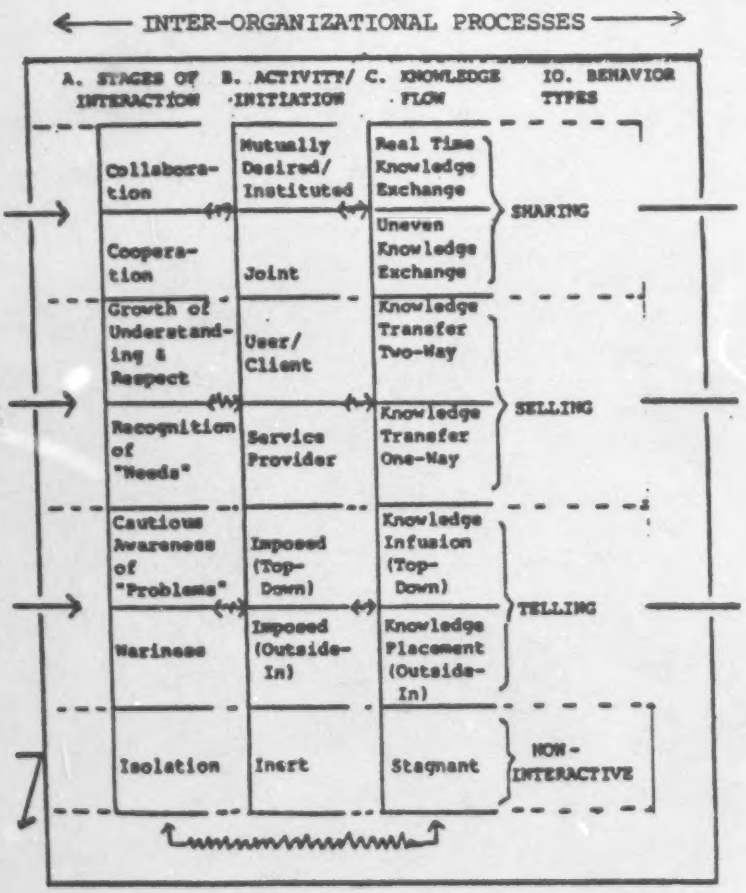
- within a context of desegregation, projects and activities which gain the most public support are the "basics" (e.g., reading, mathematics), and the least popular (which were avoided in the Pairings) would involve direct race relations work; and

- collaborative/cooperative involvements between the paired colleges/universities and schools prior to the Pairings accelerates and supports the Pairing's operations and accomplishments.

In contrast to other components in our model, such historic filters are fixed and unalterable. Furthermore, little conscious attention is given to historical and environmental factors--the Pairing participants become quickly absorbed with projects, activities, funding, power, and the like. However, to achieve higher-order knowledge flow/use for school improvement, the Pairing planners and participants need to become more sensitive to the effects of the particular history and environment of their setting. By developing more effective strategies to deal with the issues involved, the negative impact of history and environment can to some extent be reduced.

E. Effects of Interorganizational Processes

Given the nature of the structure, historic/environmental filters, and hierarchy of needs/resources discussed above, the Pairings eventually settled (after five years) into a process pattern (equalibrium) as inter-organizational arrangements. In our conceptual model we describe three sets of inter-organizational processes, ordered from low-to-high-order functioning (bottom-to-top, respectively) in several stages, as shown below (taken from Figure 5, p. 36):



Collectively these processes settled into an equilibrium at about mid-level functioning, with variations as described in the following conclusions:

- the predominant current stage of interaction in the Pairings is negotiation (interaction leading to a growth of understanding and respect), which is just short of institutionalized cooperation and collaboration because it typically involves new initiatives by one Pairing group;

- the initiation of activities in the Pairings is mixed, with the schools assuming the role of client (user) and the Universities/Colleges acting as service providers;

- the pattern of knowledge flow/use varies considerably, depending on the type of knowledge, and other process dimensions such as power, certainty, stability, needs, understanding, trust, perceived mutual benefit, and maturity (vis-a-vis problem-solving) of the participants; and

- the predominant type of inter-organizational behavior in the Pairing involves one participant group trying to "sell" other groups on ideas, projects, and activities.

In one sense this pattern of inter-organizational processes is surprisingly consistent across the three Pairings studied, with some minor variation attributed mainly to differences in the three Universities/Colleges involved. That consistency is understandable, however, given that the three Pairings share a common structure, history and environment, and needs/resources. As with these other factors, the inter-organizational processes described herein have an effect on the nature and extent of knowledge use for school improvement. Likewise, our conceptual model predicts that higher-order knowledge use for school improvement will result from higher-order functioning of these inter-organizational processes--institutionalized collaboration which is mutually desired and instituted, with knowledge exchange through a mutual sharing of ideas and resources among participant groups aimed at knowledge use for school improvement.

F. Effects of Hierarchy of Needs/Resources

As stated earlier in this section, the Pairings showed a definite hierarchy in the underlying needs to which projects and activities (resources) were applied. From lowest-to-highest order of needs resources (in terms of knowledge flow/use), we have described: expanded access to facilities and materials; added personnel for direct services to students; improved practices such as in curriculum and instruction; and (least occurring) enhancing the school's self-improvement capabilities. Movement up this hierarchy did occur over time as trust and understanding improved, to overcome the greater risk associated with efforts to improve practices and self-improvement capabilities. In our cross-case analysis, we conclude that:

- matching school needs with college/university resources requires a detailed knowledge of the school situation, to insure that concerns and expectations are fully understood;
- school people and especially parents and community leaders often assumed that the resources of the "rich" colleges and universities were limitless and available, and that to pay for them constituted a "rip-off";
- evidence of knowledge flow/use increases as we move up the hierarchy of needs/resources applied to the Pairings' projects and activities;
- viewing themselves as clients to be served, school people came to expect college/university staff to do things for, more often than with them; and
- in most cases school people wanted additions to or refinements in their existing operations--few were interested in fundamental change or renewal.

These and other aspects of the hierarchy of needs/resources applied in the Pairings' projects and activities also affect the nature and extent of knowledge flow/use for school improvement, as does structure, history/environment, and inter-organizational processes. Actually,

our conceptual model implies a complex interaction of all these factors on each other, as well as on the outcome of knowledge flow/use.

G. Knowledge Flow/Use In Retrospect

We would like to underscore a conceptual and methodological difficulty that we encountered by treating knowledge as either experience based (situational and craft), or research based. On the surface these "types" of knowledge seem distinguishable. In operation, however, they blur together and overlap to such an extent as to suggest that they are fused into something of a Gestalt. For example, as college/university and school staff talk about a particular classroom or school situation ("situational knowledge"), their selection and characterization of meaningful episodes is guided by their accumulated practical experience ("craft knowledge"), and in the case of many college/university staff especially, possibly influenced by (a less discernable) cummulative, "stored" experience in and reading of studies on or related to the topic at hand ("research knowledge"). What is expressed in verbal exchange, and hence open to observation, may be merely the tip of the knowledge iceberg. Even when asked, participants find it difficult to classify their thoughts so neatly.

Our difficulties in tracking what may be artificially distinct knowledge categories may in part be an artifact of the predominant mode of knowledge flow/use in the Pairings, namely face-to-face, verbal interaction. It may be simpler to establish the derivation of more conventionally studied R & D products, such as innovative programs or curriculum packages. But even then, we are studying the products of human thought and learning, in which ideas and memory are interwoven in little-understood patterns. It is useful to categorize "types"

of knowledge for analytic purposes, but a danger in this artificial atomization is that we may loose sight of their Gestalt.

Through this study of three very complex inter-organizational arrangements, we have come to appreciate more the difficulties involved in conceptualizing and tracking this phenomenon called knowledge flow/use for school improvement. Next time around we hope to sharpen our approach to this problem, and we encourage others to delve deeper into this knotty epistemological issue. One useful direction would involve in-depth interviewing with participants in such inter-organizational arrangements to better understand their phenomonological conceptions of knowledge flow/use. How conscious are they of these phenomena? Do they find such distinctions useful? Can they be trained to be better translators of ideas into practice? Thus, more direct probing of the outcome dimension of this study is called for in future research, before more study of the factors and conditions which affect that outcome--knowledge flow/use for school improvement.

APPENDIX A:

Cross-Case Coding Key

In preparing the cross-case analysis, the following process was employed:

1. The cases were read and summarized.

2. The inter-systems model was developed as a conceptual framework for the cross-case analysis.

3. A code was developed representing the various components and categories of the model (see Table 2, p.172).

4. The cases were reexamined and subjected to content analysis: each paragraph was coded to identify information which pertained to the model's components.

5. The cases were also examined for evidence which would disconfirm the model's applicability to the cases (this data is underlined in the appendix which follows.

6. After coding each case, the cross reference code was developed (see below) and the information was systematically reorganized into the relevant sections of the model.

7. The model was used to generate a cross-case analysis and the findings of this study.

In applying the coded information to a master format, the following system has been used: each case has been assigned a capital letter which appears first in the code--H is Harris, *D is Dunfey*, and M is Massachusetts State College. The number or small case letter appearing next, indicates which project is being referred to, or whether the information comes from the case overview--"o" or the cross-project analysis--"x". A colon (:) separates the project indicators from the specific page of the project. Since each of the three cases has a seven part format, overview, five project descriptions, and a cross-project analysis, the pages represent the number of the page of that particular project section, and not the page number of the page of the case itself. A period or point (.) separates the project page from a number representing the specific paragraph on that page. If a page number is not followed by a point and number,

that indicates the information is contained in the partial paragraph at the top of the page. Finally, a brief description of the data may be contained in parenthesis following the code. The capital letters contained in the parenthesis refer to information on role types and behavior (see Table 1), each cite is separated by a semi-colon (;).

Thus, M3:5.2 would indicate the information is located in the Massachusetts State College Case (M), third project study (3): fifth page of that section (5), and second paragraph of that page (.2). To help the reader further, each case has been assigned a specific type face:

Harris: Courier (12)

Dunfey: Ligh Italic (12)

Massachusetts State College: Letter Gothic (12)

At the top of each page is a heading identifying the specific part of the model being considered. Placed side by side, the following pages represent a full application of the information in the cases to the complete inter-systems model. Specific sub-elements of the model such as time, feedback, and role identifications are listed after the "Outcomes" and Knowledge Use Section.

Table 2

CODING FOR INTER-SYSTEMS MODEL

As Applied to Case Studies

I. CATEGORY

St = Structure; Sc = Structural Characteristic
E = Evironmental/Historic Felters
P = Inter-organizational Processes
Pi = Interaction Process; Pa - Activities Process; Pk - Knowledge Flow Process
Hn = Needs Hierarchy; Hr - Hierarchy of University Resources and Needs
Ku = Knowledge

II. SUB-CATEGORIES AND STAGES

St; Sc - M = Court Ordered Structure or Structural Characteristic
- X = Environmental Structure or Structural Characteristic
- S = Sub-System Structure or Structural Characteristic
- ¢ = Incentive System Characteristic

Pi (1-7) = Incentive Process Stage
Pa (1-7) = Activity Process Level
Pk (1-7) = Knowledge Flow Process Level;
(s = situational; c = craft; r = research)

Hn/Hr - s = Supplies
- q = Equipment and Facilities
- g = Goals
- tc = Technology and Curriculum
- p = Personnel
- r = Research

Ku - s = Situation Based
- c = Craft Based
- r = Research Based

Ko - i = Improve Present Program
- x = Extend Program
- a = Increase Access
- n = New Program
- p = Improve Achievement
- c/e = Cost Effective Data
- s = Institutionalized
- v = Leveraging

III. ROLES ( )

(A) = Advocate
(B) = Broker
(G) = Gatekeeper
(L1) = Linker - Individual
(L2) = Linker - Relationship
(P) = Participant
(R) = Regulator
(C) = Student/Client
(X) = Cross Role

IV. SYSTEM'S OPERATION CHARACTERISTICS

= Process Stage Transition
@ = Feedback Data
* = Time Data
$ = Process Dimension
% = Projectitis/Fragmentation
$ = Funding/Cost Data
Hn=Hr/Hn≠Hr = Hierarchy Match or Mismatch

CASE STUDY CODING DIRECTORY

CASE	(PAGE)	DESCRIPTION
Ho	(1-15)	Harris Overview
H1	(1-9)	Harris 1: Movement/Multicultural Program
H2	(1-7)	Harris 2: Developmental Reading at West High School
H3	(1-7)	Harris 3: District Reading Support Team
H4	(1-11)	Harris 4: Student Placement
H5	(1-9)	Harris 5: Other
Hx	(1-20)	Harris Cross-Project Analysis
Do	*(1-8)*	*Dunfey Overview*
D1	*(1-11)*	*Dunfey 1: Multicultural Curriculum Project*
D2	*(1-5)*	*Dunfey 2: Student Publication Project*
D3	*(1-18)*	*Dunfey 3: Basic Skills Reading Project*
D4	*(1-8)*	*Dunfey 4: Reid High School Physical Education Project*
D5	*(1-9)*	*Dunfey 5: Other*
Dx	*(1-34)*	*Dunfey Cross-Project Analysis*
Mo	(1-14)	Massachusetts College Overview
M1	(1-8)	Massachusetts 1: Elementary Math Assistance Project
M2	(1-8)	Massachusetts 2: High School Math Assistance
M3	(1-6)	Massachusetts 3: Student Assistance Project
M4	(1-5)	Massachusetts 4: Environmental Studies Project
M5	(1-14)	Massachusetts 5: Other - Teacher Center
Mx	(1-26)	Massachusetts Cross-Project Analysis

STRUCTURES AND THEIR CHARACTERISTICS

I. Imposed/Court Ordered

Ho:6.1; Ho:7.2; Ho:7.3 (Community CDAC's); Ho:8.1 (CDAC Leadership + B); Ho:8.2 (B); Ho:9.1 (REPC); Ho:10 (REPC's); H2:4.2; H3:6.1 (CDAC, B); H4:6.1; Hx:2.1 ("uncoordinated"); Hx:2.2 (L - relationship); Hx:5.1 (B to A); Hx:15.1; Hx:13.3 (Parents).

Do:1.1 (Dunfey-Reid); Do:4.2 (L - relationship: University Coordinator and District Superintendent); Dz:1.2 (Structure - exchange of $ and service); Dz:3 (CDAC rejects project -B/G); D3:14.3 (Need for cross-role membership and coordinator or projects fail); D3:14.3 (Need to include school administrator in structure or they G); D4:5 (Structure - constraint); D5:1.1 (Parents not focus of IOA's); Dx:1.1; Dx:1.2; Dx:7.2 (District audit); Dx:15.2; Dx:28.1-2.

Mo:1.1 (MO + District C); Mo:1.2-3 (District C organization); Mo:3.4 (Characteristics of CDAC's and REPC's); Mx:4.2 (Court order broad and vague).

II. Existing Sructures

Ho:5.2; Ho:3.4 (DRT A); Ho:12.2 (636 Proposed funding process); Ho:13.3 (636 process); Hx:2.2 (636; Hx:3 (funding).

D3:2.3 (Limited resources and 636 process = competition for $); D3:6.2 (Structural limits of 636 regulations); D4:5.3 (636 committee cuts project size); Dx:17.2 (L - relationship).

Mx:1.1; Mx:1.3 (636 process vague); Mx:6.2 (Boston Teachers Union).

III. Sub-Systems and Characteristics

Ho:1.2; Ho:2.2-3 (Decision process centralized SED); Ho:3.1 (President of University = B); Ho:3.3 (Dean SED - R, A); Ho:4.1-3; Ho:5 (Schools); Ho:7.1 (Schools = A); Hi:3.1 (Partial involvement); H3:1 (R, P); H3:1.2 (L - relationship); H4:1.2-3 (Clustering program); H4:2.1 (Program without 636 $); H4:8.1 (Consortium and existing structures); H4:8.3 (funding of the sub-system); Hx:18.2.

Do:1.1 (Reid); Do:1.2-3; Do:2-4 (Dunfey); Do:4.1 (President = A); D1:2.2 (Project structure); D2:1.3 (Public coordination = B); D2:2.3 (Two groups support projects - A); D3:14.2 (Decentralized = Lack of coordination = conflict); Dx:5.1 (Limited $); Dx:7.2 (District autonomy); Dx:13.0 (Limited $); Dx:15.2.

Mo:1.2-3 (District C); Mo:2.2 (Community coordination - low stability of personnel); Mo:4.2; Mo:3.4; Mo:5.2 (Effect of organizational mission on pairing activities); Mo:7.2 (MSC-OPDR); M3:5.2 (Recruitment problems at MSC for direct assistance to schools); M4:5 (Structure of school influences involvement in Pairing); M4:5 (Size of school important); M5:4.1 (High School characteristics different and ≠ elementary school characteristics); Mx:3.1 (Organizational mission and collaboration with schools).

IV. Incentives ¢/Funding $

Ho:3.2; Ho:4.3 (636); Ho:9 (636 CDAC (B)); Ho:10.3 ($); Ho:14.2 (Impact of ¢ on %); H1:2.1 (University $ for project); 3.2 (Need for ¢); 4.3 (HR as ¢); 6 (Responsibility as disincentive); 7.2 (E as ¢); 7.2 (Involvement and ownership as ¢); 8.1 (Sc-s + E = ¢); H2:1.1 (636 $); Hs:3.1 (Lack of ¢ at 1st); H2:4 (Structure as ¢); H2:4.1 (Hn as ¢); 5 ($ and need to have it linked to (B)); H3:1.2; H3:2.2 (Hn-goals as ¢); H3:4.3 (Importance of $ as ¢); H4:2.1 (Sub-system and structure needs as ¢); H4:4.1 (University policy as disincentive to collaborative); H4:4.2 (Abuses of ¢ System results in change in university policy); H4:7.1 (Structure as ¢); 4:9.2,3 (Structure of consortium as disincentive); H5:4.3 (Gifts as ¢); H5:6.1 (Structure impedes and therefore progress results in informal returns); 5:7 (" " the impact of ¢ structure); H5:8.2 (Publicity as ¢ and exposure and credit as ¢); H2:6.2 (Politics of $ as "side game"). Hx: 1.1; 1.2; 3.1; 4.3; 6.4; 7.0; 10.3; 15.3; 17.1,2; 17.3; 18.2; 6.4 ($).

D1:1.1 (Total $ of project); D2:2 (What ¢ are there for volunteers); D2:4.1 (Small but limited resources = need to retain control); D3:2.3 (Competition for $ influence project design results in and shapes ¢ package); 3.1 (cost of project for students 66K); D3:6.2 (Lack of $ yields no involve in year 2 of project drive to need for tuition payments); D3:8.2 (Lack of $ leads to change student arrangements so tutors travel, students not--perhaps some Pk here); D3:12.3 (Drop in (P) can be greater than decline in $ due to expansion of project and inability to transform structure, etc. $ is not all); D4:2.1 (University provides facilities as ¢ to inter-organizational behavior); D4:5 (Project cost = 60K); D5:9.1 ($ as part of Hn-Hr).
Dx:1.3; 5.0 (636); 5.1; 7.1; 7.2 (Decline); 9.0 (change); 9.0; 15.2; 16.2 (B); 23.1 (P); 24.1 (Parents); 26.2,3; 28.1 (¢ as process); 7.0 ($).

Mo:5.2 ($ and environment as ¢ to fulfill Hr); Mo:8.2 (MSC investment in Pairing; 50K over 2 years; but what ¢); Mo:7.2 (Decline $ = decline % and funds over time not = to Ko); Mo:11.1 (n/A and allocation of 636 $); Mo:12.1 (Relationship between Pk and acquiring funds); M1:1.3 ($ for project planning); M1:2.2 (11.5K for workshops).
M1:6.1 (Need for $ and professional incentives that are relevant to participants); M2:1.1 (Funding = 26K in 4 years); M2:4.0 (District and university must have investment as ¢ or ownership may be slow in developing); M2:6.2, 7. (Importance of appropriate incentives to promote inter-organizational behavior ¢ program); M3:2.1 (¢ systems of one organization may or may not be attractive to another...need translates); M4:1.1 (5,400 FY '80); M5:1.3 (Inservice courses and requirements-----provide incentive for interaction for some); M5:2.1 ($ is a general ¢, but not to all); M5:12 (Staff size and funding seem to be associated with successful or high visibility projects).
Mx:2.0 (ambiguous struct. is disincentive); 15.3–16 (¢ systems); 17.1 (Hn as ¢); 17.2 (Ko as ¢); 18.3 (paradox).

HISTORIC/ENVIRONMENTAL FILTERS

Ho:2.1 (Harris); Ho:8.1 (CDAC community ties); H1:1.2 (origins in environment of project); H1:2.1 (77-78 academic year); H1:3 (Teacher attitude toward university and university students); H1:7.2 (Parents' influence through (A,B) ¢); H3:2.2 (Parents and teachers perceptions equal); H4:5.3 (Historical traditions lead to expectations " "); 6.1; H4:8.2 (Decline of university enrollments as factor in Pairing); Hx:1.1 (P, G, A,); 10.3 (Stress); 11.1 (P, L); 11.4 (Negative environmental factors); 16.2 (negative environmental factors).

D2:2.2 (History of student newspapers); Do:3 (University and community); D5:3 (Influences on program goals etc.); D5:7 (University takes community-wide focus and district program); Dx:1.1 (Publicity); 1.2 (Mission of organization); 2.2 (Stress); 3.1 (B, G); 7.2 (District autonomy); 9.0 ; 14.1 (L) 16.0-3 (Control); 17.0 (R, G); 17.1 (Parents as negotiators); 17.2 (+); 20.1; 21.1 (-); 28.1 (Community expectations).

Mo:1.1 (Environment as a part of stress); Mo:2.2 (Level of environmental stability); Mo:3.3 (Bayside as community); Mo:4.2 (Environmental influences function); Mo:4.2 (MSC and city schools have history together); Mo:5.1 (Students have low opinion of college); Mo:5.3 (Education for service equals organizational mission); M3:2.2 (Historic linker and experience can be "+" to inter-organizational processes between universities/colleges and public schools); M3:4.2 (1:Organizational mission (can) and history can shape its movement in Pairing; 2:Historic involvement of personnel with other organizations can contribute to success); M3:5.1 (Geographic concerns and interests, do the organizations share the same relevant environment?); M5:6.0; 5.3 (Teacher Corps: Pairing can help precipiated old ideas in environment as well as new); M5:6.2 (Community tie in to Teacher Corps in District C); M5:13.1 (Inclusion of parochial schools helps gain community support in T/C); M5:13 (Change in community involvement = environmental support) Mx:1.3 (Uncertainty); 2.0 (Expectations of administration and community boards shape projects); 2.4 (History of MSC and Boston Public Schools); 3.0 (L); 3.1 (Expectations of organizational behavior); 3.1 (Typical inservice courses never had any impact); 6.0 (Traditional attitudes between schools and colleges); 6.1 (Organizational dilemma of high school (urban) in 70's); 6.3 (Stress and uncertainty); 6.1 (Wariness and isolation of school people).

INTER-ORGANIZATIONAL PROCESSES

A. Stages of Interaction

Stage 7: Collaboration - No Data Available

Stage 6: Cooperation

Hi:7.2 (Berry) (Pre-Pairings).

D4:8 (With increase T and U, greater willingness to cooperate); D5:5.2 (student service focus and joint project); 8.0 (Ongoing student services program regional cooperation and coordination between schools and universities); Dx:20.1.

Mo:4.1 (District superintendent CDAC results); M5:7.4 (Teacher Corps activities take place in schools, but administration from MSC).

Stage 5: Growth of Understanding and Respect

H1:7.2; H2:4 ("Relate" goal); H5:2.3 (Increase * presence); Hx:2.1; 4.3; 5.1 (Parents) (Change); 5.3.

D21.1 (District handbook to promote U and appreciation); D3:8.3 (University students learn about schools); D4:3.1; D4:4.2 (Institutional learning); 4.3 (Increase L and B); D4:7.2 (Increase original understanding resulting in increased trust); D5:8 (Working with students increased P/D); Dx:4.3

Mo:4.1 (District superintendent Mx:1.1 and CDAC relationship); M1:2.3 (Small group process and project junctioning); M2:3.2 (Interaction with discussion and focus results in increased T and U); Mx:3.1 (Credibility); 4.0 (Persistance).

Stage 4: Recognition of "Needs"

H2:3.2 (Teachers/faculty data); H3:2.1.

D1:3.1; D2:5 (Needs of individual schools differ and must be recongized as such by universities too); D4:2.3 (Meetings = "L"); D5:2.1 (Meetings establish needs and issues); Dx:15.1; 18.3 (G).

Mo:3.1 (N/A to identifying needs of classes, schools district); M1:2.1 (Implementation meetings with elementary teachers) (B, A, P); M3:3.2 (Discussing as way for surfacing "selling" needs and solutions); M4:2.3 (Discipline and curriculum development by principal).

Stage 3: Cautious Awareness of "Problems"

H2:2.1 (Assessments and conferences); H2:3.2 (Reading diagnosis institute); 4.2 (Reading company); Hx:4.1.

D1:3.1; D5:2 (Meetings sensitize awareness of issues; Dx:18.3.

Mo:3.1 (Needs assessments as answers/devices); Mx:1.1

Stage 2: Wariness

"H1:2.4"; "3.1" (Problem communicating need for ¢ and change); Hx:1.1; 16.2.

D1:7.2 (Need for Orientation); Dx:23.3.

M2:5.3 (Teachers in stressful systems with low P/D are wary); Mx:3.1 (" "); 3.2 (In the beginning); 6.1 (Environment and Pi2).

Stage 1: Isolation - No Data Available

B. Activity/Initiation

Stage 7: Mutually Desired/Instituted - No Data Available

Stage 6: Joint

H4:6.3; H5:3.4

D1:8.2 (Consensus); D5:1.1 (Joint efforts with schools); D5:5.2 (Student bias and gain campus project); Dx:2.1.

M1:5.3 (Project design results in increased probability of joint activity); M5:6.0 (Joint project from university origin and N/A); M5:7.4 (Administrative, application of T.C.); M5:12.3 (Planning T/C).

Stage 5: User/Client

H1:2 (Berry School); 7.1 (Freeze project); H3:4.3 (Teacher needs); 6.3; *H4:1.1 (University as client?); 8:4 (Structural dimensions for P change 5); 10.2; H5:3.1; 4.2 (University response; Hx:2.1.

D4:3.1 (Chairperson of high school physical education formerly with Dunfey "L"); D4:3.1 (High school physical education and university physical education "L2"); Dx:15.1 (L).

M2:1.2 (Meade and Math Department Chairperson request "assistance").

Stage 4: Service Provider

H1:2.3 ((P) Frese (A) Torres); H2:2.1 (Harris conference; :4.1; Hx:2.2.

Di:4; D2:4.1 (Responsibility for % Pa); D5:1.1 (University as host); 1.2 (CSCD Director as (A)); 2.1 (University as host B, L, A); Dx:2.2; 15.1 (L); 23.0.

M1:2.1 (Tile undertakes comparisons); M2:1.2 (Math lab suggestion from professor of MSC); M5:5.3, 6.1 (Teacher Corps college coordinator face MSC); Mx:4.2 (Danger of differing agenda).

Stage 3: Imposed Top-Down

Ho:15.2; Hg:8.2 (Imposed); H2:4.2 (Read coordinator (A)); H3:2.1; 5.1 (Reading support created by district office (A)); Hx:15.3.

Dx:4.2; 23; 23.3 (P).

M1:1.1 (District superintendent - math program A) (also with still - Ls); M4:1.1 (Principal as project (A) and investor); M4:1.2; Mx:3.0 (District superitendent (A).

Stage 2: Imposed Outside-In

H1:8.2 (Forced cooperation; H4:6.3.

D1:4; D2:4.2 (School publication project had elements that were imposed - i.e., uniformity); Dx23.0; 23.3.

Stage 1: Inert - No Data Available

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C. Knowledge Flow

Stage 7: Real Time Knowledge Exchange - No Data Available

Stage 6: Uneven Knowledge Exchange

H5:7.2 (Chinese student project)

D3:7.2 (Teachers exchange situation knowledge resulting in craft workshop) D4:3.3 (Joint planning and curriculum development); 4.2 (Learn about organization and background).

M1:3.1 (Close interaction around workshop = exchange S/C).

Stage 5: Knowledge Transfer Two-Way

H2:2.2 (Conference--staff, faculty, parents); H2:3 ("Professional" workshop experience and trust); H3:3.2 (" "); H3:5.2 (" ") = (L2); H4:10.2 (X-sit); 11.3 (Professionals get Ks + Kc); H5:3.2; H5,7.2 (Chinese and students).

D3:5.1 (@ of inappropriate type results in PK 2-way but ineffective); D3:6 (Student barriers, but not situational); .7 (Inter-school with common guides etc. results in P results in L results in A); D3:8.3 (Tutors help learn and teachers); D4:2.3 (Physical education curriculum at 1 site transfer Ks, c, r); D4:3.1 (Teachers talk to faculty and joint plan); D4:7.2 (Organizational transfer host results in knowledge exchange).

M1:1.2 (Meetings of faculty, corrdinators, teams and superintendent results in Ks and Kc exchange); M1:2.2 (Curriculum writing project); .3 (Teacher involvement); M2:1.2 (Grants); M4:3.1 (Joint assessment as development of curriculum on environmental studies - c, r); M4:4.2 (School based projects Pk transfer); M5:7.2 (Schools learn about their community writing and they in turn about schools - situational).

Stage 4: Knowledge Transfer One-Way

Ho:15.2 (workshops); H2:3.1 (Lectures = x resulting in x).

D1:3. (Lectures ... x); D1:8.3 (Library of information); D1:9.1 (Commitments to Kc); D3:2.3 (Teachers become K (L) in workshop design); D3:4.2 (Professor as crusader doesn't hear); .7.

M2:1.2 (Relation between Lab and math education); M2:2.1 (Having around school results in exchange); M3:6.2 (Transfer of technical from superintendent teachers to practice students); M4:1.3 (Experiencial education is valuable exchange); Mx20.2 (M).

Stage 3: Knowledge Infusion (Top-Down)

H3:4.1 (Lectures); Hx:4.1.

D3:4.3 (Lecture does not permit exchange of situation knowledge); Dx:4.2.

Stage 2: Knowledge Placement (Outside-In)

D1:7.2 (Just put into system); D1:9.; 10.1 (Too much no time); Dx:15.1.

Stage 1: Stagnant

D1:11.1.

D. Process Dimension

Needs Assessment Data - Interaction Exchange

Ho:10.3 (Needs assessment process); H2:2.1.

D1:3.1, D1:8.1-2; D3:2.1 (Needs assessment as a constraint); D3:13.1 (Yields project ideas, etc.); Dx:4.1.

Mo:3.1; Mo:9.1; Mo:13-15 (Needs assessment process described); M2:1.2 (Planning in 1975); M2:1.2 (Needs Assessment team = A); M3:1.1; M5:6.0; Mx:1.1.

H1:2.3 (Teacher attitudes to student teachers) - Terres experience); :3 (Harris University students); 3.1 (Common need and need for (exchange) and ∅); 4.1 (Delicacy of trust and good will); H1:5.1,2 (Advocates and risk-taking); "5 (Need for understanding)"; "7.2" (Involvement and ownership as ∅); 8.1 (Parent involvement and growth of inter-organizational process); 8.2 (Need for understanding of needs and goals); H2:2.1 (Teachers as P and A's); H2:2.3 (Summer conference and (P) enthusiasm)!) yields (Expectations of participants) H2:3.0 (L2); .2 (Joint role results in increased T and U); H2:5.1 (Pairing coordinator and (B) as way to increase T and respect); H2:6.1 (L2) and (B) (+P) yields (A's); H3:2.2 (Understanding); H3:3.2 (Need for power A and L2); H3:5.1 (Power and improvement of (A) and position of exchange important too); 5.2 (L2 = Coordination of reading coordinator); 6.0 ("___"); H4:1.2 (How schools influence education in schools); H4:4.1 (Birth of Consortium Council); H4:5.2 ("Process of exchange can lead to resentment, especially if unilateral"); H4:8 (Consortium or brokers); :9 (Structure inhibits P/D increase); 10.2 ("The way it was handled"); H4:11 (Persistance of district coordinator as increase P/D and A); H5:2.3 (Increased understanding of university structure and respect yields increased U and T); H5:4.1 (University education office assists District A students); H5:8.1, 2, 3 (The experience of % yields growth of personal networks and increased L1 and L2); 8.2 (Exposure and publicity + to P/D); Hx:1.1; 2.1 (P); 3.1, 2; 4.3; 5.1; 5.3 (Trust); 8.0 (L's); 9.0 (Power (A)); 9.3 (Power (G)); 10.3; 11.3 (Power); 15.2 (CDAC's, REPC's Power); 16.0; 19.2, 3; 20.1.

D1:6.1 (Role of "conflict" in evaluation of project); D1:7.1 (Need for preparation and orientation in interaction; D2:1.1 (Relationship between Ko and P/D increased); D2:2.4 (Communication through project process); D2:3.3 (CDAC perception of needs shapes reaction to % - negative (B/G)); D2:5 (Reaction to university politics can trigger negative attitudes in schools); D2:5.2 (Objective should be greater independence from collaborative effort, but university results in dependence in publicity and decline P/D); D3:2.1 (Planning under pressure yields only general goals not careful outcomes); D3:3.3 ((P) Expectations vague but needs high awareness); D3:4.3 (Exchange and experience do not in and of themselves increase P/D but may inhance mistrust or misunderstanding); D3:5.2 (When looking for communications you must consider power differential in setting); D3:6.1 (Project implementation needs administration (A) or "administrative fist" and support!); 8. (How effective is exchange between teachers...as teachers of other teachers... "reluctance to receive K from peers); D3:8.3 (The experience of Pk is different when university personnel go to schools which results in increased understanding and appreciation of school situation); D3:9.3 (School and university goals differ and can lead to misunderstanding or decreased P/D); D3:10.2 (What was appropriate role for project in school, tutors, etc., when should decide? Yield conflict here);

D3:14.3 (When excluded from process persons' roles less likely to be supportive more likely to be (G)); D3:14.3 (Communication between teachers and tutors yields probable decline in P/D without coordination); D3:16 (Same as D3:14.3 - Principal as (G)); D4:3.3 (L2 results); D4:4.1 (Information discussion yields increased T and C and U); (Interactions yields increased Ks, c); D4:1-9 (Example of how high trust, understanding leadership (L2) result in a useful project); D5:2.1, 2, 3 (Dunfey as symbol of collaboration and goals); D5:3 (university/ school conflict over resource program focus); D5:4.2 (Use of facilities can lead to increased understanding and trust and more P/D increase); Dx:1.1, 2; 2.1, 2 (Stress); 3.1; 4.23 (L, A); 5.0 (Leadership; 6.2 (Symbol); 8.2; 9.0 (Power); 10.0 (Power); 13.2 (L2); 14 (L2); 15.2 (Process); 16.2 (A power); 17 (A Power); 18.1 (A); 18.1 (A); .2 (Power); .3 (G); 19.1 (School site focus (G)); 20.1 (L); 21.1; 21.4 (B, A); 22.1 (G, L); 23.1; 24.2 (B, A); 26.4; 28.1, 2.

Mo:2.1 (Styles of operation can facilitate L2 and P/D increase when similar respected - district superintendent/college coordinator); Mo:2.2 (Level of stability low in District C); Mo:7.0 (Description of relationship between coordinator and district superintendent yield cooperation not competition); M1:1.1 (Power of district superintendent in pairing to initiate direction may be important in 1st stages: district superintendent (A)); M1:2.1 (Leadership of MSC faculty, when appropriate can develop sense of Ks use and yield P/D increase); M1:3.3 (Relationship between Pi and Pk process yield more Ku of S and C sort and pave way for infusion of Ku of r sort - consensus building yields ∅); M1:5.2 (Program-design can contribute to P/D increase--keep it small, situation focused and doable!); M2:2, 3 (Change in university personnel yields disruption of project and change focus); M2:3.2 (Discussion and concensus bulding yield increased P/D and promotes higher forms of inter-organizational behavior); M2:4.2 (Change agent must be willing to "prime the inter-organizational pump" draw from verbal encouragement instead of action support) (Teachers too busy to do more; Did not complete this part of task); M2:5 (" " Change practice is more difficult than it is without incentives); M2:6.1 ("investment of time and energy" yields increased T and U); *M3:3.2 (Least threatening interactions which can fulfill mandate); *M4:4.3, 4 (Principal and teachers develop project and initial reaction is ownership and commitment): M5:1.2 (As result of pairing, teachers and administrators "feel free" to call upon college coordinators faculty at MSC for additional services!); Mx:1.3 (Uncertainty); 1.3 (*delay decreases P/D); 2.1 (stagnation); 2.4 (Hisotry and P/D); 3.1 (Limited perception of other organization); 3.2 (P/D/change/*); 4.1 (Administrative power and interest shapes project); 5.0; 6.3 (Stress); 18.2; 20.3; 21.1.

Stage Transition Data

Ho:7.1 (Principals "were disappointed"); H1:2.2 (Torres' hope that Ko yields increased P); H1:4.1 (Disappointment decreased P/D); H2:4.2 (Pairing and exchange yields # on inter-organizational processes); H3:6.2 (Intent for Pairing projects to become increasingly self-sustaining); 7.2 (Increasing contact improves P/D); H4:6.3 (Change = decreased P/D due to process by which it is undertaken); H4:7.1 (Impact of clustering arrangement); H4 (Positive improvement of aid to school people); H5:2.3 (Pressures and commitment yield #); H5:3 (Imput of increased P and Exposure yield #); H5:4.2 (Stress yields #); H5:5.2 (Complex structure retards transfer or unexpected below); 7. (" " what will happen without $); 9.2 (Increased contact brings increased understanding); Hx:6.2; 6.4 (P increase and decrease); 14.2.

D2:5.2 (Objective to increase independence of schools); D3:6.3 (Teachers (P) yields "L" to system); Dx:6.1; 6.3 (P decreased; L increased); 8.4; 14.1 (Personal qualifications of coordinator); 15.2 (Disappointing) 22.2 (P yields G due to Ko decrease); L3.4 (P yields change).

Mo:7.1 (Understanding of how roles and administrative styles can compliment yielding increased P/D); Mo:8.1 (How change St can facilitatate inter-organizational processes); Mx:3.1 (Important!); 21.2 (Pk5-6); 23.2 (P change).

HIERARCHY OF NEEDS (Boston Public Schools)

1. Research/Ideas

   H2:3.2

2. Personnel

   Ho:15.2; H1:2.1 (B); 3.2; Change (Physical education instruction); "8.2; 9.0"; (Need relief and personnel); H2:1.2 (2 teachers + 2 aides); H2:3.2; 6 (More aides); Hx:20.0 (Need for ? with situation knowledge).

   D3:3.1 (Tutors); 9.3 ("); D4:5.2; D5:5.2 (Hn student achievement = Hr student recruitment); D5:7.3 (Schools as learning labs).

   M2:4.1 (Anything and anyone to help); M4:3.1 (Need for project coordinator); Mo:11.2; Mo:11.3 (Practicum-supervisors); M3.1.1; Mx:4.0 ("Realistic types").

3. Technologies and Curricula

   Ho:15.2; H1:1.2 (L); 3.2; H2:3.2; H5:4.1, .2; H4:1.1; H5:1.3; Hx:3.2.

   D1:8.3 (Curriculum); D2:2.1 (" "); D3:4.1 (Specific situation needs); 4.3 (Hn - Tc - Ks); D3.7.3 (Appropriate Tc and curricula); D4:3.2 (Physical education curricula); 5.3 (Limit of needs).

   M1:2.2 (Math curricula); M2:4.1 (Any help you can give); Mx:4.0 (Realistic information).

4. Goals

   H3:2.2 (Goals and outcomes); H4:11.1 (University (SED's) have need to influence partners); H5:8.2 (Need for exposure for success).

   D3:9.3 (Goal differences between school and university); Dx:1.1 (Publicity)

5. Equipment and Facilities

   H2:1.3 (Equipment); H5:4.1.

   D4:1.1 (Hn = Hr); D5:4.2 (Hn = Hr); D5:7.3 (Schools as learning labs).

   Mo:11.2 (Physical education facilities); :11.3; Mo:11.3 (Practicum sites for education major); M5:1.2 (Use of facilities).

6. Supplies

   Hx:17.2.

   D1:11.1.

   M4:3.1 ($ for projects).

HIERARCHY OF RESOURCES AND NEEDS (Universities)

1. Research/Ideas

   H5:3.2 (R & D centers).

   D3:17. (Ideas as advocates).

2. Personnel

   Ho:3.1; H4:1.1; 3.4 (Need to place practice teachers in schools as ¢); 4.0 (P); H4:7.2 (" "); ,# 5:4 (Need for Students yields help to students); Hx:6.4; 20.0 (Need for situation knowledge from university types).

   D3:3.1 (Work study for students); D3:9.1 (University tutors as (L) and (P)); D4:5; D4:5.2; D5:5.2 (Hn student achievement = Hr student recruitment); D5:7.3 (Schools as learning labs).

   Mo:5.2 (Need for placements and enrollments); Mo:11.2; Mo:11.3 (Practicum supervisors); M3:1.1; M5:6.1 (Student internships); Mx:16.5 (Physical education).

3. Technologies and Curricula

   Ho:3.1; H1:8.2 (University goals); H4:1.1; H5.3.2; H5:1.3.

   D3:16.3 (Learning A of R.P.); D3:17. (Teaching as advocacy); D4:4 (Physical setting and curriculum).

   M2:1.3 (Tc of grant meeting and math education).

4. Goals

   H3:2.2 (Goals and outcomes); H4:11.1 (University (SED's) have need to influence partners); H5:8.2 (Need for exposure for success).

   D3:9.3 (Goal differences between school and university); Dx:1.1 (Publicity).

5. Equipment and Facilities

   Ho:3.1; H2:1.2 (University $ lease-purchase).

   D4:1.1 (Hn = Hr); D5:4.2 (Hn = Hr); D5:7.3 (Schools as learning labs).

   Mo:11.2 (Physical education facilities); :11.3; Mo:11.2 (Practicum sites for education majors).

6. Supplies

   D3:2.3 (University need tuition and $); (Shops project costs).

HIERARCHY OF NEEDS = HIERARCHY OF RESOURCES

H1:8.2 (A and P); H4:1.1 (Tc, P) = H4:10.1 (Tc, P) = Hn =/≠ Hr.

D1:10.1 ≠; D2:3.2 (Hn s.p. ≠ Hr. q. p.); D2:6.1 (Even good ideas need to conform to priority structure in a limited resources environment); D3:3.1 (Tutors = weak student background); D3:4.1 (Even if level of Hn = Hr ; if Pk needs are ≠ process will field; teachers' needs Hn - Tc - Ks lecturer without Ks Hr - Tc - Kc ... project identifies this gails); D3:6 (Ks professor ≠ Ks teachers); D3 (Case of Hr ≠ Hn yields decreased P/D); D5:3 (University Hr and Stm ≠ Hn); D5:5.2 (University need for students - school need for education students); D5:7.3 (Schools as learning labs); D5:9.1 ($ as Hn - Hr goal); Dx:1.1, 2 ((A) =); 3.0 (≠); 5.0 (≠); 8.2 (=); 9.0 (=); 18.1 (≠).*

M2:2.1 (Math assistance not = math labs) (No incentive for Ku or Lab V.); M2:7.2 (Hn ≠ Hr in project as experience of * delay); M3:1.2 (Ans = HrP ... and student assistance project); M4:3.2 (Hn - P = Hr - P with Tc); Mx:5.2 (Hn = Hr as basis for project condition " ").

KNOWLEDGE OUTCOMES

1. Leveraging (v)

   H1:7.2 (Problem of v in district).

   D5:9.3 (ESAA Funds); Dx:3.1, 18.3 (Morale).

   Mi:7.2; M5:2, 3, 4 (NSF Grant); M5:6.1 (Teacher Corps).

2. Institutionalized (s)

   Hi:4.2 (New curricula into school project); 7.2 (Institutionalized bilingual curricula); H3:3.2 (Established permanent network); H3:3.2 (" "); H3:6.3 (School planning teams); H4:6.4; H5:1.3; Hx:6.2; 7.0.

   D2:1.4; Dx:6.2; 12.1; 13.1; 19.0.

   M4:3.3 (Institutionalized environmental project); M5:6.1 (Teacher Corps).

3. Cost Effective Data (c/e)

   H4:7 (?).

   D2:4.1 (Cost to publish newspaper); Dx:3.2; 7.0; 18.3.

4. Improve Achievement (p)

   Ho:14.1; H2:2.1; H3:4.2; 7.2; 11.2: Hx:5.2.

   D3:11.2 (Scores); Dx:8.1.

   M1:1.1; M4:1.2.

5. New Program (n)

   H2:7; H3:7.2; H4:3.2; 11.2: H5:1.3; 7.2.

6. Increase Access (a)

   Ho:14.3; H4:3.2.

   Dx:8.1.

   M4:1.2.

7. Extended Program (x)

   H1:7.2 (Problem of x); H2:4.2; 7:, H3:4.2; 7.2; H4:3.2; 10.2; Hx:3.1 (P); 7.0.

   D1:2.3; D2:1.4; D3:6.3; 7.1; Dx:4.2.

   Mo:11.2; M1:7.2; M4:1.2; M5:13.2.

8. Improve Present Program (i)

   Ho:14.4; H2:2.1; H2:7; H3:2.2; H4:3.2; 11.2; H5:1.3; Hx:7.0.

   D1:1.3; 2.3; D2:1.4; D5:5.2 (Hr=Hn); Dx:2.1; 3.1; 6.1 (P, L).

   Mo:11.2; Mi:1.1; M4:3.3 (Curriculum improvement); Mx:4.1 (L2); 18.2; Mx:7.1 (* improvement of ( ) to Ko).

9. Miscellaneous (Ko)

Hx:26.2 (C); 19.2, 3.

D1:6.2 (Quality of Ko); D2:1.4; (Ko yields P/D increase yields St yields Ko); D3:7.1 (Variable outcomes); D3:7.1 (Greatest outcome with communication, within schools with other teachers); D3:7.2 ("Organizational dynamics does not change teaching" due to lack of Ks); 8.2 (too).

Mo:1.1 (Mandated outcome); Mo:6 (Use of system for grants and $ as an outcome c); Mo:10.1 (Listing of workshops Pk and possible outcome began 1975, 1976); M1:3.2 ("Math Assistance" all of its goals have been met); Mx:2.2 (Goal displacement); 24.2 ("Project focus as Ko").

KNOWLEDGE USE

1. Research Based

H3:4.1; 4.2; H3:5.2; H5:1.3 (Reading); H5:3.3 (R and D Regional!).

D1:1.3 (Contemporary resources); D3:6 (Complex instructional system employed in classrooms); D3:16.2; D4:7.1 (University commitments ideas change practice).

M5:13.2 (T/L is part of Ku network and forms institutional Ku dissemination basis for schools); 13.4 (").

2. Craft Based *

H3:4.2; H4:1.1 (Schools inform universities); H3:5.2; H4:3.2 (Grantsmanship and the $ process); 10.2; H5:1.3 (Reading).

D1:1.3 (New perspectives); 5.2; D3:4.1 (General approach of workshop '; 4.2 (University craft not necessary = school craft); 6.; D3:16.2; D4:6.2, 3, 4 (Physical education campus P yields L yields change); D4:7.1 (Consultant changes T practice); Dx:20.1.

Mo:6 (Grant writing as craft Pk); M3:6.2 (Assumption about institute); M4:1.3 (Assumption of experiential education); Mx:20.2 (dc dr); 22.1, 2.

3. Situation Based *

H3:6 (" " improvement); H4:1.2; 10.2; H4:11.3; H5:2.3 (Ks about university); H5:7.2 (Students better able to conduct job and university interviews); Hx:4.1; 4.2; 20.0.

D1:10 (District conference); D1:11.1 (L); Dx:20.1, 2.

M2:4 (Need for ownership and investment if project will work); M2:7.3 (Need for Ku s for successful project interorganizational behavior); M3:4.3 (Need for individuals with Ks for good projects...).

* Sub-categories of experience based professional knowledge.

TIME DATA (*)

Ho:4.1 (Collaborative Coordinator 76-80); Ho:7.1 (Time & change); Ho:8.2 (Time commitment of CDAC); Ho:8.1 (CDAC tenure)' Ho:11.1 (Project goals 76-77); Ho:13.2 (Method-time focus); Ho:14.2 (Design); H1:1.1 (1/79-5/80); H1:1.2; H1:2.2; 4.1 (Critical timing); 6.1 (Outcomes); H2:1.1 (76-77); H2:2 (No change in original operation over four years); H4:7.2 (Time shifting priorities); H5:6.1 (Time needed to yield Ko); Hx:1.1; 2.3; 3.0; 3.1; (Change) .1; 4.3; 5.3; 8.4 (change yields L); 9.0; 12.1; 15.1; 17.2; 19.3.

Do:6.1 (Time and method); D1:2.3 (Time on project planning); 6.1 (Input of [lack of] on project outcomes); D3:1.1 (1976-78 with moderation); D3:1.1 (Time of project for T and D); D3:2.3 (Transfer of information lead to problems); D3:6.1 (Need for more time); D3:8.3 (Tutorial retained and time for eliminations = 20 m.p.m.); D3:10.2 (Inter-organizational coordination takes time and patience); D3:12.3 (Second year yields time yields lower (P)); D4:1.1 (Two year attempt to provide physical education "Q" for school); D4:2.2 (Inter-organizational time schedules can differ yielding organizational problems for collaborative); D5:1.1 (Level of university involvement yields increased three year through stable year 4 and 5); Dx:2.0; 2.2, 3; 3.1, 2; 7.1; 8.2; 10.0; 20.1 (B, L).

Mo:8.1 (Proposal process time consuming leads to change); 8.2 (Involvement of coordinator decreases as process becomes known over time); Mo:9.2 (Over time $ decrease is a feature of funding); M1:2.2 (6-day workshop on curriculum writing); M1:3 (Time spent on project yields Ko); M2:1.1 (Math project high school yields 5 year project); M2:3 (Time and personnel change); M2:6.1 (Time and relation to P/D increase); M4:3.3 (Things run down over time and commitment yields clique ownership if process is not attended to); M5:5, 6 (Teacher Corps idea whose time has come); Mx:7.1 (Dynamic * Process!); Mx:1.1 (Inter-organizational processes*) 1.3 (Delays etc and P/D); 2.0 (Year 1 process vague); 3.2 (Changing attitudes of P's); 4.0 (Persistance = increased P/D); 4.2.

FEEDBACK (@)

Ho:4.1; Ho:9.2 (Attempt to change mandated structure --Regulators and Brokers); Ho:12.3 (Annual evaluation process); H2:4 (Funding process as Feedback); H3:4.2 P choice = increased P); H4:7.1 (Goal displacement and clustering); H4:10.1 (Increased communication yields increased advocacy among A's and L's); H5:5.2 (Complex structure inhibits feedback); 6.2 (" "); H5:8.3 (VERY IMPORTANT); 9:1, 2 (DITTO); Hx:2.1, 2.3; 6.1 (Ko yields P); 14.2; 18.2.

D3:3.2 (Structural change on project); 4.3 (Need for appropriate feedback); D3:5.2 (Differences between formal and informal feedback: in university setting [formal] you may not get Ks feedback); D3:11.1 (@ results in change in project structure from 7 part time to 4 full time tutors); Dx:2.1, 3.0; 6.0; 8.0; 14.1; 15.2 (K/P); 22.1; 28.1.

Mo:7.1 (Good working relationship at top increases @ at that level); Mo:8.1 (Important *); Mo:9.3 (@ as part of 636 funding through evaluation); M1:2.2 (Teachers give information on Ks to professors and effect design); M1:3.2 (Short cooperative feedback and reinforcement); M5:2.1 ("Using the system" is an important bit of knowledge that facilitates increase of pairings); M5.7.2 (" "); Mx:2.1 (District superintendent changes 636 review and funding process at District C level): 5.2; 18.2; 23.1 (K process and P/D).

ROLES ( )

H1:1 (C = 300 students); H1:2.1, 2 (Torres B and A); "H2:" (A successful project needs powerful (A) and (L2) and Ko resulting in increased (P and A) ¢ ($) and (roles) P, A) results in Ko); H2:1.1 (C = 9th and 10th grade students and 11th and 12th grade volunteers); H2:5 (Growth of A and L at positions of authority in District A); H3:3.1 (P = 15, Reading Coordinator changes); 3.2 (Process by which P becomes L becomes A!!); H4:3.1 (P = 164 Harris University students); H5:5.2 (The relationship between linkers and advocates results in increased P).

D1:1.2 (Clients = 249 teachers or P and characteristics of "P"); D1:6.2 (Low number of P's); D1:10.3 (636 facilitiator as School (A) and (B)); D2:5.1 (Coordinator as (Broker, A) and (G) for school); D3 (Teachers trained (P) = 48 from 13 sites with 600 student clients (C)); D3:1.3 (Coordinator [university] as (B) (A) and (L); D3:4.2 (Professor with solution in search of problem as advocate fails due to lack of appropriate @ or sensitivity to Hn - Ks!); D3:6.2 (Project P results in A or teachers and linkers as per project design); D3:13.2 (Year 2 of project (C) decreases 30% with staff about the same); D4:6.2, 3 (4 teachers attend camp P becomes L becomes A); D5:1.1 (University as broker); D5:2.1 (President as (A)); Dx:1.3; 10 (President's power as A); 11.0; 12.0 (L2); 16 (B, G); 16 (A, B); 18.0 (A); 20.3; 24.1; 25.1; 14.1 (Personality of coordinator).

Mo:2.1 (District superintendent as (B) and (A)); Mo:2.1 (District Superintendent and collaborative coordinator = L2); Mo:3.1 (Teachers in this pairing are primarily (P)); Mo:3.2 (Principals and heads as either (G) or (A) in standard operating procedures of District C); Mo:7.1 (College president as broker); .1 (Coordinator and president as L2); Mo:6.3 (District superintendent and coordinator as L2 with specifics on o:7.0); Mo:8.1 (Faculty at MSC as (P) for most part); 8.2; 9.0 (Coordinator as "L" decreases); Mo:11.1 (District Superintendent as B); M1:1.1 (Relationship between District Superintendent and math faculty member as MSC = L2); M1:3.2 (Project Director as "A"); M1:4.1 (Personal attributes of project director contribute to probability of project success--(1) reputation as authority; (2) situation knowledge and facility as process K leader and project designer; (3) Advocate in position of power [District Superintendent]); M2:2.2 (Headmaster acts as (G) and terminates math project in algebra; Professor as "A"); M2:3.2 (Discussion as way of illiciting (P) and (A) in client system); M2:5.2 (Head as (G) and lack of coordination can make project implementation more difficult); M2:6.1 (Attributor of an (A) and how to win trust and (P)); M3:2.2 (Project Director as L with Ks of particular system and historic ties); M3:4.3 (Role experience important for pairing success... greater public school experience for university people yields greater success); M4:1.2 (Principal as advocates--position and power); M4:2.3 (Principal brings entire school into project); M4:4.3 (Project as statement of education philosophy and advocacy (A)); M5:4.2 (Problem in high school project is attracting (P;s)); M5:12.2 (Pairing temporary staff (A) seems to effect project outcome); Mx:1.3 (Involvement of full time coordinator); 2.3 (Quality of successful university (P)); 4.0 (Need for persistence and *); 4.0 (Need for Ku-s); 4.1 (A and power); 5.3 (Attitudes of "consultants" P/D); 7-15 (Mx role analysis).

IMPORTANT OBSERVATIONS

Involvement of Regional R & D Center H5:3.3!

Inter-organizational projects require great planning and have # of logistical problems - need for orientation; craft experience etc.... need for greater care in planning and preparation D3:11.3°
Conflict and lack of coordination results in decreased expectations and increased resistance to inter-organizational arrangements D2:14:15!
Hn/R/¢/St results when compatible and successful projects with proper P/D power and "L, A"

The shared history of college and schools (MSC Boston Schools has +/- for inter-organizational collaboratives) Mo:4.2, 3.4.
The time in proposal development and approval lead to change in structure at district level which results in facilitating pairings and supports hypothesis of systems model (Mo:8.1, 2)!
Evidence of knowledge "creep" M1:4.2.
Solutions in search of problems results in incentives which create unexpected outcomes or consequences M2:3.1, 2.
Relation between structure, environment, and needs as an influence on process and Ko M2:6.2.
Least threatening project to fulfill mandate: evidence of project focus M3:3.2.
Teacher Corps have build in structural constraints that were different, but none the less shaped that organization (M5:12.3; 1:13, 5 - Project autonomy T/C from 636 constraints is source of pride, but now endangered by federal circumstances.
Projection is Mx:24.2.

APPENDIX B:

Types of Knowledge Exchanged in Pairings' Projects

In this section we will examine the types of knowledge exchanged in the projects sponsored by the Pairings and possible relationships between the complexity of the activities achieved and the types of knowledge exchanged in each of the projects.

Four levels of activities were identified and are explained in detail elsewhere in this report. Briefly, they are: use of facilities, in which the schools or the university gain access to the buildings, equipment, staff, etc., of one of the others; direct services, in which students from the schools are directly served by university personnel; improved practices, in which university input assists the schools to discharge responsibilities more effectively; and enhancing the system's self-improvement capabilities, in which schools and university cooperate to increase the schools' potential for increasing their own effectiveness, without external assistance.

With respect to these levels of activities, we assume that all four are desirable, but that the third and especially the fourth are preferred outcomes, in that their effects are likely to persist after a project formally concludes or the pairing itself terminates, and in that they usually involve more persons and more sectors of both the schools and the university, entwined in more complex relationships, than the first and second types.

In order to analyze the types of knowledge exchanged in a project conducted by a pairing, we devised a system for categorizing knowledge based on previous intestigators' research on the knowledge/use (K/U)

process. This system was jointly developed, tentatively applied, and revised in a series of meetings of senior staff members during November and December, 1980. After an acceptable degree of reliability had been informally attained, the task of analyzing and coding each project summary was assigned to one senior staff member, who completed the analyses described in this section during January and February, 1981.

The category system divides knowledge into two main sorts: education knowledge and utilization knowledge. Education knowledge is information, concepts, theories, facts, etc. concerning the teaching and learning process as this occurs in and out of schools. The possessor of education knowledge presumably knows how to influence some or many aspects of learning and teaching, although he/she may not always be in a position to put his/her knowledge to use for a variety of intrinsic or ecological reasons. Utilization knowledge is information, concepts, theories, facts, etc. concerning the communication and use of education knowledge in and out of the schools. The possessor of utilization knowledge presumably knows how to achieve the adoption of new or improved policies and practices, although he/she may not always have access to those bits of education knowledge most relevant to a particular educational setting.

The category system further subdivides both education and utilization knowledge according to the processes out of which both types emerge. Some knowledge of both sorts results from systematic, scientific inquiry: this we refer to as research knowledge. Some knowledge derives from the repeated, shared, and crystalized experiences of thoughtful practitioners: this we designate as craft knowledge. A third form of knowledge accrues from the daily activities of educators in specific local settings (classrooms, schools, systems) and is usually not evenly shared even by practitioners working in the same or similar settings: we label this situational knowledge.

Research knowledge originates in disciplined inquiry, and craft knowledge is the distilled "wisdom" of professional practice, but situational knowledge derives from no particular mode of knowledge generation. Rather, situational knowledge may stem from research (e.g., a needs assessment) or from experience (e.g., awareness that a particular teacher strongly influences the principal of a school). The category system used in this section thus postulates two types of situational knowledge: situational-research knowledge and situational-craft knowledge, and in this respect is slightly more complex than the category system used elsewhere in this report.

These considerations simultaneously applied produce eight categories for the classification of knowledge exchanged among partners in the pairings. The eight types, the abbreviations used to refer to them in the coding process, and examples of each, are listed below:

Type of Knowledge	Abbreviation Used	Hypothetical Examples
Education Research	ER	citation of a study comparing alternative programs for teaching of reading summary of an analysis of the history of funding of special needs programs in the district
Education Craft	EC	suggestion that field trips can improve class cohesion and morale decision to use a particular reading program as the result of teachers' comments
Education Situational-Research	ES-R	use of systematic needs assessment to choose an activity for the pairing to sponsor reference to the results of a standardized test in math given throughout a grade level

Type Knowledge	Abbreviation Used	Hypthetical Examples
Educational Situation-Craft	ES-C	statements by experienced teachers about the interests of the children in their school a principal's statement that the students in his/her school need help in math
Utilization Research	UR	evidence cited from a field study that certain incentives motivate teachers more than others reference to a literature review of research on inservice education strategies
Utilization Craft	UC	insistence by a coordinator that teachers do curriculum planning during school hours coordinator's use of his/her skills in writing up a proposal designed by a group in the pairing
Utilization Situational-Research	US-R	citation of project's records and data in preparing a second-year application use of data from a school self-study to try to improve curriculum within the school
Utilization Situational-Craft	US-C	coordinator recruiting college faculty to pairing activities appropriate to their interests principal's knowledge of how to approach central administration for additional supplies or staff

The senior staff member scrutinized each of the twelve project descriptions, attempting to identify and classify, according to the preceding schema, all reported incidents involving the transfer and exchange of knowledge. Transcriptions of the coding sheets thus produced are included as Appendix B. Several additional conventions were developed during the process of coding, which can be observed in the coding sheets. First, most of the

projects seem naturally divisible into two or more "espisodes", or sets of knowledge transfer activities clustered close together chronologically. Each incident of knowledge exchange is therefore coded with a numerical subscript (1, 2, 3, etc.) according to the episode to which it belongs (first, second, third, etc.).

Second, more examples of knowledge use clearly occurred at identifiable times and places (at a specific meeting, over two or three particular days, in a particular proposal, etc). Other exchanges or transfers took place over a longer period of time, such as a school year or the entire lifetime of the project; examples might be a coordinator's continuous pressure and support for a particular project, and a principal's intimate knowledge of the children in his/her school. Incidents of knowledge exchange are therefore listed into two columns, in the coding sheets: <u>acts</u> of knowledge use, coded on the right side of the page, and adorned with the previously mentioned subscripts to indicate their approximate chronological order; and <u>contexts</u> of knowledge use, coded on the left side and each enclosed in parentheses, representing more or less long-term inputs by various parties in the pairing, either continuously or intermittently.

Third, the case writers' accounts occasionally specify the absence, insufficiency or negative valence of a particular form of knowledge; e.g., the inability of a college coordinator to recruit college faculty, negative assessment data on a project, teachers' unwillingness to contribute situational knowledge they possess, etc. Instances such as these are coded with a bar over the usual abbreviation; e.g., $\overline{US\text{-}C}$.

Finally, certain "standard codings" evolved for especially common sub-types of knowledge use. The most important of these appear below:

Sub-type of Knowledge Use	Coded	Rationale
School or district requests university for assistance in a project	US-C	School or district representative is displaying knowledge of strategies for activating the pairing
Coordinator recruits and assigns college faculty members(s) to work on a project	US-C	Coordinator is showing knowledge of how to approach and enlist his/her colleague(s) in pairing business.
Professor or administrator writes a proposal for a project	EC + US-C	Proposal normally shows evidence of professionals' ideas of what is possible and desirable in a school, plus strategies for attaining such goals
Committee or official reviews a proposal	ES-C + US-C	Committee typically inputs its knowledge about the educational circumstances prevailing in a school, plus its ideas about strategies for implementation
Needs assessment or project evaluation is carried out and reported	ES-C or ES-R	Information about a school or component thereof is collected, coded ES-C or ES-R depending upon the formality of the techniques used

We formulated no explicit hypotheses before doing the coding. Very generally, we expected to encouter few instances of ER and UR, having noted few of these in casual reading of the accounts and in previous experiences with schools involved in change projects. Aside from this, we made no specific predictions of what we would find in the data.

Figure 11 (p. 199) presents the results of the coding analysis. Column A lists the twelve projects, segregated by sponsoring university. Column B indicates the Level of Activity achieved by each project, in our judgement. The columns grouped under C summarize the frequencies of each type of knowledge transfer among those listed on the Context side of the coding sheets; the columns grouped under D summarize the frequencies of each

FIGURE 11

A Project	B Level of Complexity of Activities	C Contexts (Frequency) E ER EC ESR ESC	C Contexts (Frequency) UR UC USR USC	D Acts (Frequency) E ER EC ESR ESC	D Acts (Frequency) UR UC USR USC	E Context (%'s) ER EC ESR ESC	E Context (%'s) UR UC USR USC	F Acts (%'s) ER EC ESR ESC	F Acts (%'s) UR UC USR USC
Harris Dev. Rdng	4>3	11 - 2 - 7	- 1 - 1	27 - 5 1 3	- 7 - 11	- 18 - 64	- 9 - 9	- 19 4 11	- 26 - 41
Harris Rdng Supp't	4>3	4 - 2 - 1	- - - 1	28 - 6 2 4	- 7 - 9	- 50 - 25	- - - 25	- 21 7 14	- 25 - 32
Harris Stud.Place't	3>2	32 2 7 - 1	- 6 - 16	12 - 2 - 1	- 2 - 7	6 22 - 3	- 19 - 50	- 17 - 8	- 17 - 58
Harris Move't Multic	2	7 - 1 - 2	- 1 - 3	28 7 - 2	- 3 - 16	- 14 - 29	- 14 - 43	- 25 - 7	- 11 - 57
Mass. College Bus. Uc Math	3>2	9 - 3 - 3	- 1 - 2	35 1 6 1 8	- 4 - 15	- 33 - 33	- 11 - 22	3 17 3 23	- 11 - 43
Mass. College Elec Math	3	10 - 3 - 3	- 1 - 3	27 - 6 - 6	- 7 - 8	- 30 - 30	- 10 - 30	- 22 - 22	- 26 - 30
Mass. College Stud. Ass'tce	2>1	9 - 2 - 4	- - - 3	17 - 1 2 5	- - - 9	- 22 - 44	- - - 33	- 6 12 29	- - - 53
Mass. College Env'tal Studs	2	3 - 2 - 1	- - - -	18 1 3 - 5	- 1 - 8	- 67 - 33	- - - -	6 17 - 28	- 6 - 44
Dunfey Phys Ed	3>1	3 - - - -	- - - 3	50 6 15 - 9	- 1 - 19	- - - -	- - - 100	12 30 - 18	- 2 - 38
Dunfey Multicult'l	3	26 1 5 - 6	- 8 - 6	49 5 10 3 8	1 9 - 13	4 19 - 23	- 31 - 23	10 20 6 16	2 18 - 27
Dunfey Reading Skill	2>3	10 - 1 - 3	- 3 - 3	59 2 8 7 16	- 4 - 22	- 10 - 30	- 30 - 30	3 14 12 27	- 7 - 37
Dunfey Stud Public'ns	2	7 1 3 - -	1 - - 2	28 4 2 6	- 5 - 11	14 43 - -	14 - - 29	- 14 7 21	- 18 - 39
Σ	30.0	131 4 31 - 31	1 21 - 43	378 15 73 18 73	1 50 - 148	3 24 - 24	1 16 - 33	4 19 5 19	- 13 - 39
$\bar{X}$	2.5	10.9 .32.6 - 2.6	.1 1.8 - 3.6	31.5 1.3 6.1 1.5 6.1	.1 4.2 - 12.3				

type of knowledge transfer listed on the Acts side. The columns under E and F report the same data in percentage form, first for Contexts of knowlege use and then for Acts of knowledge use.

Interesting findings and patterns appear on Table 1. Column B reveals a fairly wide degree of variation in the levels of complexity of activities attained in the twelve projects. Three projects remained firmly at level 2, provision of direct services to students. Most are mixtures of level 2 (direct services) and level 3 (improving school practices with university assistance). Two projects, self-improvement capabilities, while also retaining significant aspects of level 3. In general, Harris Univesity's projects achieved a higher level of complexity (mean of 2.9 for all four projects) than those assisted by Dunfey (2.4) and Massachusetts College (2.3). Possible explanation for this disparity will be discussed below.

The results presented by percentages are easier to interpret than when presented by frequencies. However, a few comments concerning the frequencies of the various kinds of knowledge transfer are necessary. The total number of contexts coded ranges from 3 to 10 (Columns under C), except for two projects--the Harris Student placement effort and the Dunfey Multicultural Project--for which the totals are 32 and 26, respectively. The description of Harris University's Student Placement Project is written in summary, analytic style, compared to the chronological and descriptive accounts of the eleven other projects; as a result, discrete acts of knowledge use are difficult to pinpoint and most of the codings (73%, or 32 of 44 total incidents) appear in the Contexts column. The Dunfey Multicultural Project is a relatively complicated and "politicized" effort; in describing it the case writer frequently cited the opinions, feelings, goals, etc., of various participants, most of which had to be coded under "Contexts".

These qualities of the Multicultural Project mark it off from the other eleven, in other words.

The total number of coded acts of knowledge exchange per project (Columns listed under C) ranges from 17-59, omitting for the moment the Harris Student Placement Project for which only 12 "acts" of knowledge use are recorded, for reasons already discussed. Several factors account for this relatively large variation. First, projects at the second level of complexity (direct services) seemed to require fewer acts of knowledge transfer; e.g., the Student Assistance (17 total acts) and Environmental Studies (18 acts) efforts at Massachusetts State College. Second, some projects evolved linearly for only one year, after which they reproduced themselves annually; others continued to change, grow, and/or decline over a period of two or three years, during which time a greater number of novel knowledge exchanges occurred and thus were coded. Finally, the case writers certainly differed in their ability to identify various types of knowledge exchange, despite the training and staff discussions in which they participated through the period of research. Thus, in the four Harris University projects and the four Massachusetts College projects the case writers identified means of 23.8 and 24.3 acts of knowledge exchange, respectively; but the mean number of acts for the four Dunfey projects was 46.5. It is doubtful that the "careers" of these last four were really that much more tortuous than those at Harris and Massachusetts College. Disparities such as these in the frequency counts incline us to use the percentage figures listed in the Columns under E and F for the major analyses of this section.

In examining the percentage figures under Columns E and F, we will look almost exclusively at the distribution of acts, listed under F. The

percentages for contexts, under E, are based on relatively low frequencies, and thus relatively volatile in their responses to small differences in absolute numbers. Furthermore, the percentages in the context columns in general parallel those in the acts columns; there are few or no anomalies to explain. Our general hypotheses that there would be few incidents involving ER and UR are supported in the tabulated data. Overall, only 4% of the total number of acts in the twelve projects were classified as examples of ER. The 4% represents a total of 15 acts, of which 13 occurred in Dunfey's projects, which in turn included especially large numbers of professors and other experts offering courses and didactically-oriented workshops. These were typically coded "ER + EC". Only one example of Utilization Research (UR) appears in the twelve project descriptions, that an instance early in the Multicultural Curriclum Project when Dunfey staff provided technical assistance to school personnel who were conducting needs assessment. It appears, then, that these twelve projects from the Boston Pairings were carried out essentially without the use of education and utlization research knowledge. Education craft knowledge (EC) appeared in all projects, with nearly 1/5th (19%) of the total number of acts thus coded and a range from 6% (Massachusetts College Student Assistance) to 30% (Dunfey Physical Education). Craft knowledge emerges as an essential component of pairings activities. Both university and school personnel were apparently content to use articulated professional experience as the foundation of the programs they implemented in the schools. They were not attracted to a research base, or perhaps felt that they could not assemble one.

Education situational knowledge based on research (ES-R) surfaced rarely (5% of the total acts recorded, and in only seven of the twelve

projects). Of the 18 instances of ES-R, almost all were needs assessments, program evaluation, and test score reports; two, from the Dunfey Reading Skills Project, were negative examples (i.e., inadequate data and non-utilization of available needs assessment data). Although events scored ES-R were relatively infrequent, examination of the case narratives suggests that they often played pivotal roles in the development of projects. In three or four cases, ES-R data from surveys and evaluations blended with EC and US-C data from key actors' interests and previous experiences in the schools and university, and produced impressive results. That is to say, ES-R information was sometimes manipulated to influence project trajectories in ways favored by influential figures in the Pairing.

Education situation knowledge based on craft "lore" (ES-C) occurred in all twelve projects, ranging from 7% to 29% of the total acts in each, with a mean of 19% across all twelve (the same as the mean for EC). Inasmuch as ES-C knowledge consists of participants' information about their own school, district, university, etc., it is not surprising to find it as a common, second level component of the knowledge-use dimension of the projects. Indeed, it is a little odd that the percentages for ES-C are not higher, across the projects. One would expect that discussions focused on "What this school needs is...", etc. would be prominent components of the planning of all or most of them. But the project descriptions more commonly recount the use of needs assessments (ES-R), on the one hand, and proposals springing fully-developed from the heads of either school or university entrepreneurs (EC + US-C), on the other. The potential for thorough ES-C exchange seems not to have been realized.

As mentioned above, only one example of UR was identified in the case studies. Craft knowlege about utilization (UC) was a feature of

eleven of the twelve projects, with a range of 0% to 26% among them, and a mean of 13% across all. UC is more or less common sense wisdom about how to get new ideas implemented, and it (or UR) seems logically requisite if something innovative is to occur. The one project in which no UC was coded is the Student Assistance Project is Massachusetts College, concerning which the case writer comments, "The idea of college students working in the public schools was clearly not an innovation which school personnel might be reluctant to accept...", and "Faculty members at MC...did not have to be convinced of the educational value of field experience." Furthermore, the three projects with the highest proportions of UC (26%, 26%, and 25%) were also among those that attained the highest levels of complexity (4<3, 4<3, and 3); these three are Developmental Reading and Reading Support at Harris and Elementary Math at Massachusetts College. There were no coded instances of US-R: that is, use or mention of studies of the management and fate of knowledge, in a school system or in a university. Thus defined, US-R emerges as an exotic category, very unlikely to be found during the first year of a project or pairing. Boston's research and evaluation priorities, prior to 1975, did not include assessment of what it means and how well it nurtured innovations. Similarly, never during the first or later years of the twelve projects examined here did anyone systematically address the question, "How well and in what ways are we managing this effort? What suggestions can we make about appropriate project management techniques for the next few years?" People were caught up almost entirely in proposing, implementing, adapting. This is understandable, but also disappointing, given the expertise available.

At last we come to the "guts" of each of the projects, US-C or knowledge of how to get things done in the local situation derived from the actual

experiences of educators in that situation. Across all of the projects, 39% of the acts fall into this category, ranging from a low of 27% in Dunfey's Multicultural Curriculum effort to a high of 58% in Harris' Student Placement enterprise. The knowledge thus coded is typically information about whom and how to contact "downtown" to gain access to needed equipment, how to write a realistic proposal that engages the energies of all potential participants, how to identify and recruit appropriate university faculty to specific projects, and the like. US-C knowledge is an important component of the projects in these pairings, one that might easily by overlooked or discounted in a search for more glamorous components such as ER or UC. Clearly the system-wise "broker", with his/her contacts through the subculture of education and a sense of the different incentives that motivate members of various constituencies, played a major role in each of the projects.

Yet the significance of this type of knowledge and its usual purveyor--the university coordinator or the district facilitator--can be exaggerated. Looking again at the level of complexity of the activities in each project, and comparing the two most complex sponsored by each university with the two least complex, we see that an average of 35% of the total acts of the first six are US-C, while 45% of the total acts of the less complex projects are US-C. Viewed another way, the four projects with the highest proportion of US-C (Harris' Student Placement and Movement-Multicultural, and Massachusetts Colleges' Elementary Math Program and Environmental Studies efforts) have a mean complexity rating of 2.0, compared to a mean rating of 3.0 for the four with the lowest proportion of US-C (Dunfey's Multicultural Curriculum and Reading Skills projects, Massachusetts College Elementary Math program, and Harris' Reading Support Project). Knowledge

of how to get things done locally (US-C) seems to be a necessary, but not a sufficient, condition for the development of projects into the third and fourth levels of complexity.

What may be the sufficient condition, added to US-C, is suggested in Figure 12, below. Figure 12 divides the projects into two groups, the six with the most complex levels of activity and the six with the least complex. It also shows the combined total of EC and UC acts for each project, and the percentage this combination comprises of the total acts in each project.

FIGURE 12

	Project	Level of Complexities of Activities	Total Acts	EC + UC (from) Table 1	% EC + UC
HU	Developmental Reading	473	27	12	44
HU	Reading Support	473	28	13	46
MC	Elementary Math	3	27	13	48
DU	Multicultural	3	49	19	39
HU	Student Placement	372	12	4	33
MC	Ingliss Math	372	35	13	37
			178	74	42%
DU	Reading Skills	273	59	12	20
DU	Physical Education	371	50	16	32
HU	Movement-Multicultural	2	28	10	36
MC	Environmental Studies	2	18	4	22
DU	Student Publications	2	28	9	32
MC	Student Assistance	271	17	1	6
			200	52	26%

For the six most complex projects, the mean percentage of ED + UC acts is 42%, for the six least complete, the mean percentage is 26%. (If the top four projects with activity ratings of 3.0 and above are compared with the other eight, the proportions are similar, 44% vs. 28%).

This unanticipated finding suggests the following tentative conclusion: if the activities of a pairing are to reach the third and fourth levels, in which some degree of institutionalization is achieved, a moderate amount of local level politicing and brokering (US-C) is required, plus a relatively high level of combined ED and US input; in other words, knowledge of education and utilization gained from the repeated, shared, and crystalized experiences of thoughtful practitioners, usually not through involvement in the activities of the project itself. What seems essential is the engagement of project personnel in more than straight forward implementation of a suggestion or request originating in either school or university: the original impetus must be elaborated through negotiations and experience by the partners.

Three of the six projects classified in Table 2 as closer to the second level of activity than to the third or fourth are good examples of what happens when the "elaboration" of the original impetus does not occur. In two of them (Environmental Studies and Student Assistance), Massachusetts College responded with alacrity and sensitivity to a request from the schools, providing highly useful services and access to facilities. However, school-university interaction went no further than this. Neither party attempted to extend the boundaries or the complexity of the original efforts, and the projects remained dependent for continuation on the good will of the original collaborators and (to a lesser extent) on the availability of external funding. The Dunfey Reading Skills Project exemplifies an unelaborated initiative from the other direction. The University proposed a specific approach to reading remediation, which the schools accepted--for a time. The demise of the project is certainly in part related to the inability of either or both parties to elaborate on or adjust the original "contract", to move on from the initial agreement when it became

clear that it was not satisfying all participants.

Three of the projects classified in Figure 12 as in the third or fourth levels of complexity demonstrate the potential of "elaboration" via EC and UC. The history of the Harris Developmental Reading Project is strewn with planning conferences and workshops, coded EC and UC, in which the original ideas for an effort in secondary reading were transformed and adjusted. Similarly, initiative for the Reading Support Team Project came from the school district to Harris but went through several phases, informed by EC and UC knowledge, before becoming rather thoroughly institutionalized throughout the district. Finally, Massachusetts College's Elementary Math Project escaped becoming another bureaucratic exercise in curriculum-writing because the District Superintendent and the Project Director kept adding wrinkles (EC and UC) to the original enterprise.

These interpretations would be more convincing if a more complex coding analysis had been feasible, in which directionality of knowledge transfer (to whom, from whom) was included. The data and conclusions also suffer from the fact that the three field workers certainly attended to and wrote about somewhat different features of the pairings they were assigned to describe. Nonetheless, the present analysis demonstrates the potential productivity of a comparative approach combining ethnography and ad hoc content analysis. It is hoped that future projects will continue to apply and refine these methods.

APPENDIX C:

Directory

The purpose of this directory is to provide a list of resource people involved in university-school collaboration throughout the country. The impetus for these collaborations, as in Boston, is some kind of desegregation or magnet school activity. It should be noted that none of the collaborations listed below are of the magnitude or scope of Boston's. The uniqueness of the combination of a court order and a fixed state funding source sets the Boston Pairings apart from others. Nonetheless, cities are attempting in their individual ways to encourage inter-organizational arrangements of all kinds.

The following list gives a brief description of collaborations of some significance. Other sites were investigated but reported no formal, enduring relationships. Evanston (Illinois), for example, put together several collaborations in the course of its desegregation effort, but these no longer exist. Evanston, does, however, have what a spokesperson describes as a "close association" with a number of universities in the area. This example seems to represent a number of other school systems.

The St. Louis (Missouri) School District, as another example, has no formal collaborations, but the Danforth Foundation funded a person at Washington University to establish a community partnership for the St. Louis schools. Subsequently, the St. Louis District hired the same person as a Deputy Superintendent for Community Partnerships to work on establishing more formal inter-organizational relationships among schools, universities, businesses, and other community organizations. Such a situation is worth noting as it could be a useful model for other school districts attempting to establish formal partnerships.

Chicago's school adminstrators are just now in the process of establishing a desegregation scheme for the city with the help of outside university consultants (e.g., Dean Green from Michigan State). This illustrates the development of university-school collaboration at the "planning", as opposed to the "activity" level that may be an effective lead-in to larger-scale, classroom-level collaboration in the future.

It also seems important to list here the fifteen Desegregation Assistance Centers located across the country. Established in 1964 by the Civil Rights Act, they are housed in universities and often encourage inter-organizational activities among universities and schools. Although some, like the University of Hartford Center, have little association with the University that houses them, others, like the Kent State Center, involve University staff in many technical assistance activities. Such technical assistance can involve university people working with school people on desegregation-related problems such as long-range planning, assisting staff to manage resources, providing personnel training, enhancing intergroup awareness, assisting in classroom management, and revising curriculum to reflect multicultural needs.

Several universities in one service area may provide resources through the Desegregation Assistance Center to any school system in the area, and a university may serve more than one district. Kent State, for example, works with the schools of Cleveland, Columbus, and Cincinnati, as well as smaller districts.

University-School Collaboratives (February, 1981)

Boston (Massachusetts) Public Schools

- Court order in 1976 mandated university-school pairings as well as cultural and business pairings.
- Continuous source of funding comes from the State Department of Education, Chapter 636 monies.
- Universities and colleges were paired with specific schools and/or whole districts for the most part have remained partners over the years.
- Larger programs have full-time university coordinators, while smaller ones staff with part-time personnel; school administration varies with responsibility ranging from a district superintendent to a school administrator or teacher.
- Projects developed at district or school level must be approved by parent advisory council, School Committee, and State Department.
- Activities may include direct services to students, curriculum revision, staff development workshops, use of facilities, etc.

- Contact:

Dr. Joyce Grant
Department of Planning and Policy
Boston Public Schools
(617) 726-6310

Buffalo (New York) Public Schools

- Court order in 1976 mandated university-school collaboration and required that universities be involved in planning for desegregation.
- University people were initially involved by serving on committees, later in helping to establish magnet schools. Most involvement is from the state universities, who train teachers to function in desegregation intervention teams.
- The schools are now in the midst of Phase III of court order and still encouraging inter-organizational arrangements with institutions of higher education.

- Contact:

Mr. Kenneth J. Echols
Assistant Superintendent
Buffalo Public Schools
(716) 842-3188

Cleveland (Ohio) Public Schools

- As part of desegregation court court order, the schools were required to actively solicit involvement of institutions of higher education, businesses, and cultural institutions.
- The Desegregation Office of Cleveland Public Schools and the Commissioner of Higher Education jointly developed six different models representing the types of involvement universities could have with schools. The purpose of developing models was to prevent the universities from getting locked into one type of arrangement, and to provide options for involvement.
- Three hundred letters describing the models were sent out. The Office of Desegregation will talk to every university college president by April, 1981.
- There is no formal funding--School District is looking for exchange of resources and in-kind involvement.
- Certain universities are already involved in a variety of ways: Tayanoga Community College helped establish magnet school planning team; Dean of the Law School at Cleveland State is working with a law-oriented magnet school; Carroll University is assisting a science magnet school; etc.

- Contact:

Ann Follie
Office of Desegregation
Cleveland Public Schools
(216) 696-2929

Dallas (Texas) Public Schools

- Adopt-a-School Program
- Court order of 1976 set up desegregation implementation to involve different segments of the community (universities, businesses, religious organizations).
- Funding and staffing is through School Department's Community Relations unit.
- Collaboratives are of varied scope and duration, with approximately fifteen different colleges; several have been ongoing since 1976. (Southern Methodist University, Bishop College).
- School Department works closely with Higher Education Task Force, and visits individual universities to assess resources and match needs.
- Activities vary: volunteer work, staff development, student tutoring, etc.

- Contact:

Sandra Malone
Dallas Public Schools
(214) 824-1620

Denver (Colorado) Public Schools

- Since court order of 1974, schools have worked closely with a number of universities (Metropolitan State, University of Colorado at Denver and Boulder, University of Northern Colorado, University of Denver).
- Technical assistance from universities has varied: providing courses related to desegregation for teachers, assisting in human relation activities, university consultants running workshops of all kinds.
- No fixed funding exists; much of the work is done through in-kind funding (e.g., the Dean of Metropolitan State works with the Superintendent and his staff "gratis" because he feels he has a responsibility to the city). Some services are paid for by the Public Schools, but much is exchange of free human and physical resources.

- Contact:

  Dr. Evie Dennis
  Denver Public Schools
  (303) 837-1000

Los Angeles (California) Public Schools

- Limited collaboration with uniersities and magnet schools presently, with possibility for collaboration with University of California - Los Angeles, California State - Northridge, and Domingus Hills College, and University of Sourthern California School of Medicine.
- Three-year association exists between University of Southern California and a magnet school for arts, math, and sciences; no funding is provided for USC involvement. USC provides physical and human resources, information and services.
- Half-time coordinator of magnet school programs, funded by ESAA, administers these programs for the schools.
- Most pairings operate in conjunction with magnet schools.

- Contact:

  William Layne
  Magnet School Coordinator
  Los Angeles Public Schools
  (213) 625-4177

Providence (Rhode Island) School Department - Brown University

- No formal funding available to this pairing.
- University contributes space, facilities, human resources, and physical resources
- Two and one-half years old

- Contact:

  Lynn Smith
  Providence School Department
  (401) 456-9289

Providence (Rhode Island) School Department - University of Rhode Island

Government and Law Magnet High School

- Funds available through ESAA award.
- Formal partnership through 1979 letter of agreement.
- Activities include direct service to students, direct service to teachers, parent participation, and research/linkage.
- Proposals for activities initiated mostly by high school personnel but final decisions about activities are collaborative.
- Important aspect of this collaboration is the complete commitment of the President of the University of Rhode Island.

- Contacts:

URI Principal Investigator
Marcia Marker-Feld
University of Rhode Island
(401) 277-3928

Lynn Smith
Providence School Department
(401) 456-9289

Title IV of the Civil Rights Act of 1964
Desegregation Assistance Centers for Race-Fiscal Year 1979

Service Area (i): MC, NH, MA, CT, RI
Mr. James Barnes, Director
Desegregation Assistance Center for Race
New England Equal Education Center
University of Hartford
121 Sigourney St.
Hartford, CT 06105 (203) 522-7166

Service Area (ii): NY, NJ, PR, VI
Dr. Sam Henry, Director
Desegregation Assistance Center for Race
Teachers College, Columbia University
Institute for Urban and Minority Education
525 West 120th St.
New York, NY 10027 (212) 678-3386

Service Area (iii): PA, DE
Dr. Olga Duff, Director
Desegregation Assistance Center for Race
University of Pittsburgh
4029 Bigelow Boulevard
Pittsburgh, PA 15260 (412) 624-5865

Service Area (iv): MD, VA, WV, DC
Dr. Howard W. Allen, Director
Desegregation Assistance Center for Race
University of Virginia, School of Education
Ruffner Hall, Emmet St.
Charlottesville, VA 22903 (804) 924-3527

Service Area (v): KY, TN, NC, SC
Dr. Frederick P. Venditti, Director
Desegregation Assistance Center for Race
224 Henson Hall
Educational Planning Center
University of Tennessee
Knoxville, TN 37916 (615) 974-6638

Service Area (vi): MS, AL, GA, FL
Dr. Gordon Foster, Director
Desegregation Assistance Center for Race
University of Miami
School of Education, P.O. Box 248065
Coral Gables, FL 33124 (305) 284-3213

Service Area (vii): MN, WI, MI
Dr. Charles D. Moody, Sr., Director
Desegregation Assistance Center for Race
University of Michigan
School of Education
Ann Arbor, MI 48109 (313) 763-9910

Service Area (viii): IL, IN
Dr. Frank Aquila, Director
Desegregation Assistance Center for Race
Indiana University, School of Education
3951 North Meridian St.
Indianapolis, IN 46208 (317) 264-2921 WATS 1-800-428-2166

Service Area (ix): OH
Dr. Robert Evans, Director
KEDS Desegretation Assistance Center for Race
Kent State University
301 Wright Hall
Kent, OH 44242 (216) 672-2828 or 672-2829

Service Area (x): IA, NB, KS, MO
Dr. Charles Rankin, Director
Desegregation Assistance Center for Race - Midwest
Kansas State University
Department of Administration and Foundation
Holton Hall
Manhattan, KS 66506 (913) 532-6408

Service Area (xi): AR, LA, OK
Dr. Joe Garrison, Director
Desegration Assistance Center for Race
Consultative Center for Equal Educational Opportunity
The University of Oklahoma
555 Constitution Avenue
Norman, OK 73069 (405) 325-1841

Service Area (xii): NM, TX
Ms. Elena Vergara, Director
Desegregation Assistance Center for Race
Intercultural Development Research Association
5835 Callaghan Rd., Suite 350
San Antonio, TX 78228 (512) 684-8180

Service Area (xiii): ND, DS, MT, CO, WY, UT
Mr. Richard Thomas, Director
Desegregation Assistance Center for Race
Weber State College - 1101
3750 Harrison Boulevard
Ogden, UT 84408 (801) 626-6650

Service Area (xiv): CA, AZ, NV, HI, GU, TRUST TERRITORIES, AMERICAN SAMOA, COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS

Dr. Leonard Beckum, Director
Desegregation Assistance Center for Race
Far West Laboratory for Educational Research and Development
STRIDE
1855 Folsom St.
San Francisco, CA 94103 (415) 565-3079

Service Area (xv): OR, WA, ID, AK

Dr. Richard Withycombe, Director
Desegregation Assistance Center for Race
School of Education, Portland State University
P.O. Box 751
Portland, OR 97107 (503) 229-4624

APPENDIX D:

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